# DRAFT
# PANOCHE VALLEY SOLAR PROJECT
# HABITAT RESTORATION AND REVEGETATION PLAN

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# 1.0 INTRODUCTION

## 1.1 Project Description

Panoche Valley Solar, LLC (PVS) proposes to build and operate a 246 megawatt (MW) solar photovoltaic (PV) electricity generation facility in the Panoche Valley of eastern San Benito County, California (Figure 1). The Panoche Valley Solar Facility (Project) is proposed to occupy approximately 2,506 acres (Figure 2) of privately held land, with an additional 24,176 acres of permanent conservation lands being preserved and managed contiguous with the Project footprint. The Project will construct and operate solar array complexes consisting of PV panels mounted on steel or aluminum structures, equipment pads, an operations and maintenance (O&M) building, an electrical substation and switchyard, direct current (DC) to alternating current (AC) power inverters, electrical collection lines, Pacific Gas & Electric telecommunication upgrades, and associated infrastructure such as perimeter and access roads, fencing, and tie-ins to adjacent power transmission lines.

General Mitigation Measures for Impacts to Biological Resources (MM BR) were adopted as part of the Final Environmental Impact Report (EIR) approved for the Project by the San Benito County Board of Supervisors in November 2010 (San Benito County, 2010). Measure MM BR-G.3 requires preparation of a Habitat Restoration and Revegetation Plan (HRRP) addressing restoration of anticipated construction impacts to the project site. A Draft Supplemental EIR was prepared by the County in December 2014 and finalized in April 2015 (San Benito County 2014, 2015) to address project changes and included clarifications to some of the Mitigation Measures. Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler) was retained to prepare this HRRP in accordance with MM BR-G.3 as revised per the 2015 Supplemental EIR. It includes a soil restoration plan, a revegetation plan, and a monitoring plan. Although the revegetation principles outlined in this plan can be applied to treatment of the site during decommissioning, a detailed facilities closure restoration plan is not provided. In accordance with milestones outlined in BR-G.3, the Final Closure Plan will be prepared by the project owner for County review and approval one year prior to the start of ground disturbance associated with Project decommissioning.

## 1.2 Project Area

### 1.2.1 Physical Setting

The Project site is situated on the northwest side of the Panoche Valley, roughly 60 miles west of Fresno, California and approximately 3.4 miles northwest of the unincorporated community of Panoche in San Benito County, California. It is bordered on the east by the Panoche Hills and on the west by the mountains of the Gabilan Range/Las Aguilas Mountains. The Griswold Hills border the south side of the valley. Las Aguilas Creek bisects the Project site from west to east and Panoche Creek lies just to the south of the site. San Benito County Road J1, also known as Little Panoche Road after it turns northward toward the Little Panoche Valley, bisects the Project site north to south.

Geographically, the valley and associated hills surrounding the Project are within the Diablo Range, one of the interior California Coast Ranges that border the San Joaquin Valley. The Project area is mapped on the Cerro Colorado, Llanada, Panoche, and Mercey Hot Springs, California United States Geological Survey 7.5 minute quadrangle maps, and located within Township 15S, Range 10E, sections 3, 4, 8 to 11, and 13 to 16, and Township 15S, Range 11E, section 19, Mount Diablo Principal Meridian. The site is contained within the valley, and is characterized by relatively low relief, gently sloping to the south and southeast with elevation varying from approximately 1,440 feet in the north to 1,280 feet above mean sea level (amsl) in the southeast. A number of small ephemeral washes and drainages occur in the area, with Las Aguilas Creek and Panoche Creek being the most significant streams.

Climate in the region is typically the common Mediterranean pattern found in much of California, with dry hot summers and relatively mild, moist winters. The region is considered high desert, and receives about 8 to 10 inches of precipitation, mostly as rainfall, with the majority falling from October to April (Western Regional Climate Center, 2015). Average daily temperature is about 64 degrees Fahrenheit, but ranges from average lows in the mid-thirties in the winter to nearly 100 in the summer months.

Soils are generally alluvial or fluvial in their origins, with alluvial fans and fluvial deposits derived from the surrounding hills. These were classified into three categories based upon likely origins of the component sediments (ENGEO, 2010). Franciscan alluvium is derived from the western hills and are generally somewhat reddish in color and represent a heavy, dense clayey or silty sand with gravels, cobbles and boulders. Panoche alluvium is derived from parent material in the Panoche hills to the east, and were olive to yellowish brown hard silty clays. No significant depth of topsoil or organic soils were observed in test pits (Kleinfelder, 2014). Fluvial deposits were variable assemblages or sand, silt, clay or gravel, mostly deposited along Panoche Creek to the south of the Project area. These general classes are consistent with the six soil mapping units defined by the Natural Resources Conservation Service (NRCS, 2015; Figure 3). These are generally loams with Panhill and Panoche loams on the alluvial fan at the base of the Panoche Hills; Panoche loam and sandy loam in the central part of the valley, including Panoche Creek; and Yolo loam and gravelly loam on the fan on the west side of the Project site. All of these soils are classified as slightly susceptible to wind and sheet and rill water erosion, and are well-drained with low runoff potential. Test pits evaluating subsurface conditions at the Project site found soils on west side to be generally silty to clayey (Kleinfelder, 2014).

### 1.2.2 Biological Setting

Historically, the site has been used primarily for grazing over the past 100 years, but has also supported field crops at times in the past, most notably in the 1950s to 1970s, with a small portion of the Project site supporting irrigated row crops into the 1990s. Crops included cotton, potatoes, turnips, cucumbers, watermelons, sugar beets, and lettuce.

The Project site is characterized as a non-native grassland sparsely dissected by ephemeral or intermittent washes (San Benito County, 2010). This can be further classified as an annual brome or red brome grassland semi-natural herbaceous stand (Sawyer *et al.* 2009), depending upon local species dominance at the time of botanical or vegetation surveys. According to data collected in support of the 2010 Final EIR, dominant graminoids include non-native bromes such as ripgut (*Bromus diandrus*), red brome (*B. madritensis* ssp*. rubens*), and soft chess (*B. hordeaceus*), along with other non-native annual grasses such as rattail grass (*Festuca myuros*) and foxtail barley (*Hordeum murinum* ssp*. leporinum*). Dominant or common forbs are also primarily non-native, including two filarees (*Erodium botrys* and *E. cicutarium*), shepherd's purse (*Capsella bursa-pastoris*), and bur clover (*Medicago polymorpha*), though some natives were also common including shining peppergrass (*Lepidium nitidum*), vinegarweed (*Trichostema lanceolatum*), turkey mullein (*Eremocarpus* [*Croton*] *setigerus*), and fiddlenecks (*Amsinckia menziesii, A. tesellata*]. These natives generally favor more ruderal, disturbed habitats in the Project area.

Native spring wildflowers are also found in areas that have not been heavily impacted by grazing or historical agriculture (San Benito County, 2010), including Kern brodiaea (*Brodiaea terrestris* ssp. *kerniensis*), blue dicks (*Dichelostemma capitatum*), blow wives (*Achyrachaena mollis*), California goldfields (*Lasthenia californica*), coastal tidytips (*Layia platyglossa*), Great Valley phacelia (*Phacelia ciliata*), and paintbrushes (*Castilljea brevistyla* and *C. exserta*).

Stock ponds, seasonal depressions and vernal pools are also found onsite supporting flora commonly associated with seasonally wet areas including slender woolyheads (*Psilocarphus tenellus*), fine-branched popcornflower (*Plagiobothrys leptocladus*), and white-tip clover (*Trifolium variegatum*) (San Benito County, 2010).

Amec Foster Wheeler Restoration Ecologist Clayton Kraft visited the site in March 2015 and documented the following plant species, including California Invasive Plant Council (Cal-IPC) designation (for invasive species), and approximated the absolute cover (which can be more than a total of 100% based on the strata or different layers of vegetation overlapping) of each species for the site:

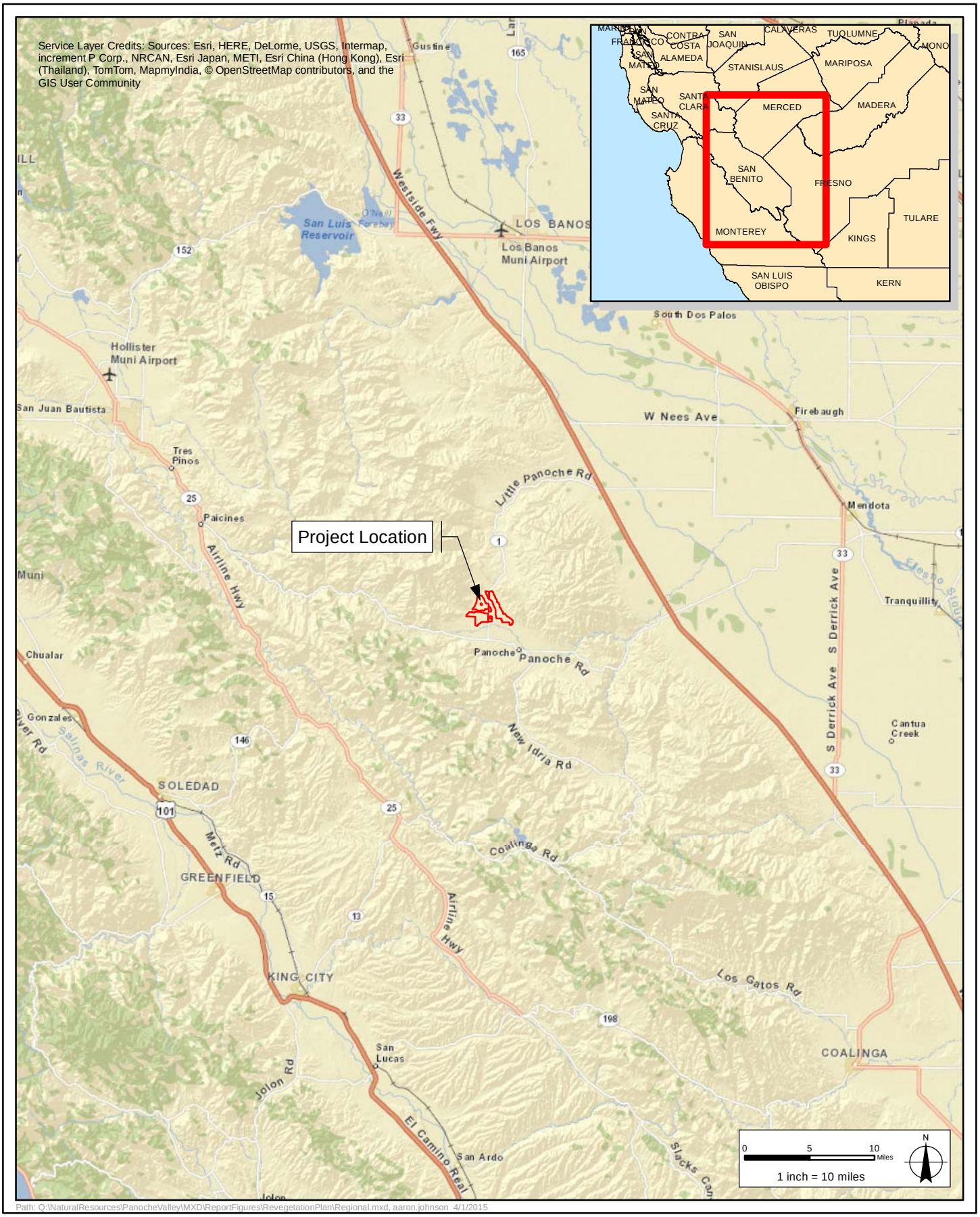
Nonnative:

1. Cheeseweed (*Malva parviflora*), 1-2%
2. False Dandelion (*Hypochaeris glabra*), CAL-IPC Limited, 1-2%
3. Mediterranean Barley (*Hordeum murinum*), CAL-IPC Moderate, 10% - 15%
4. Red Brome (*Bromus madritensis* ssp. *rubens*), CAL-IPC High, 15% - 25%
5. Red Stem Fillaree (*Erodium cicutarium*), CAL-IPC Limited, 80% - 95%
6. Bur Clover (*Medicago polymorpha*), CAL-IPC Limited, 1-2%
7. Pineapple Weed (*Matricaria discoidea*), <1%
8. London Rocket (*Sisymbrium irio*), CAL-IPC Moderate, 1-2%

Native:

1. Popcorn flower (*Plagiobothrys collinus*) or (*P. acanthocarpus*), <1%
2. Ranchers Fiddleneck (*Amsinckia intermedia*), <1%
3. Shining Pepper weed (*Lepidium nitidum*), 10% - 15%
4. Owl's Clover (*Castilleja exerta*) or (*C. densiflora*), <1%
5. Miniature Lupine (*Lupinus bicolor*), 1-2%
6. Common Muilla (*Muilla maritime*), <1%
7. Tidy Tips (*Layia platyglossa*), <1%
8. Nevada Gilia (*Gilia brecciarum*), <1%
9. Purple Sanicle (*Sanicula bipinnatifida*), <1%
10. Seed Plantain (*Plantago erecta*), <1%
11. California Goldfields (*Lasthenia californicus*), 1-2%

Based on this 2015 visit, red stem fillaree is the dominant species present on the site and most native species represent less than 1% of the vegetative cover.

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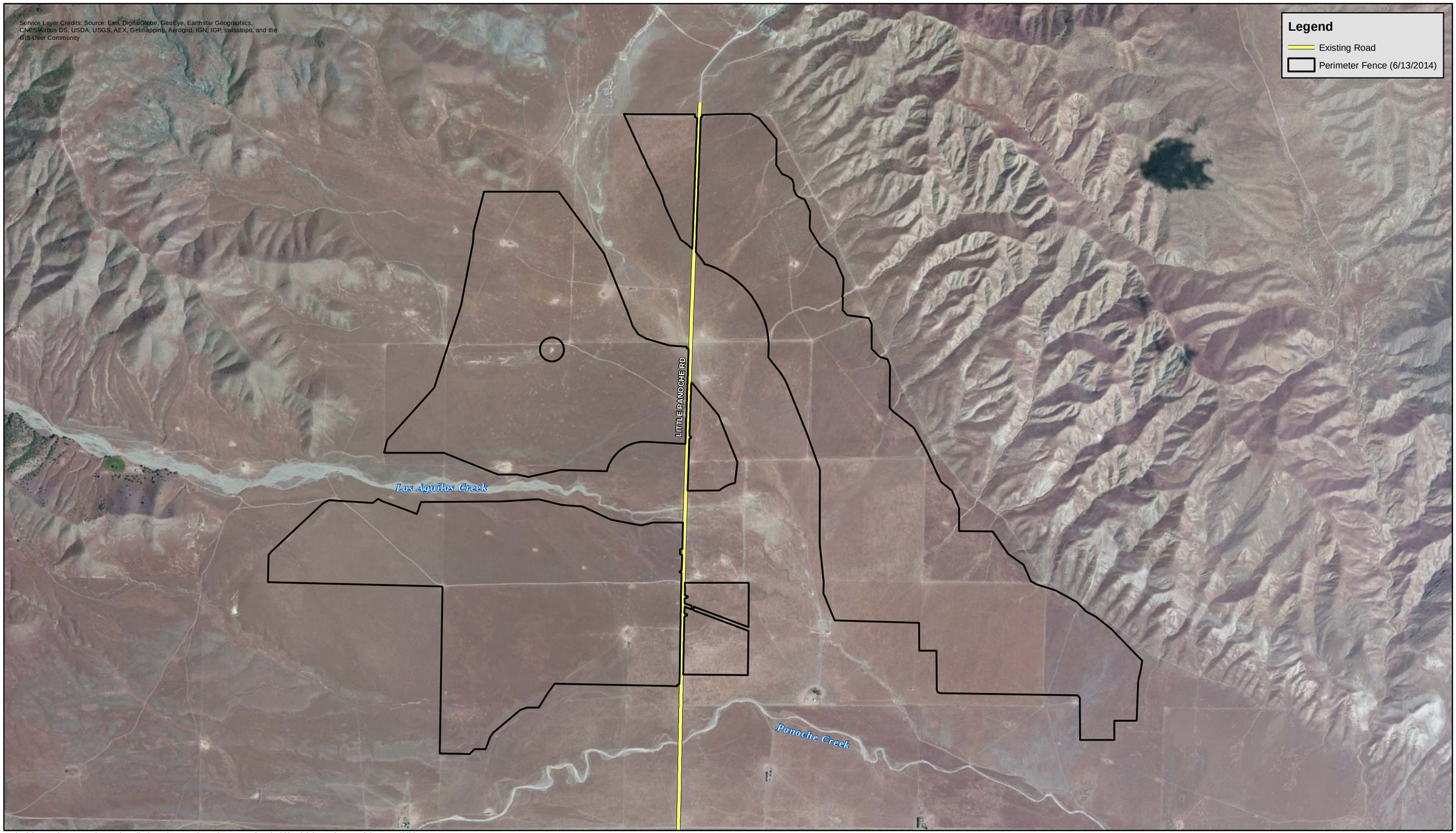
**Regional Map**
**Panoche Valley Solar Project**
**San Benito County, CA**

**FIGURE**
**1**

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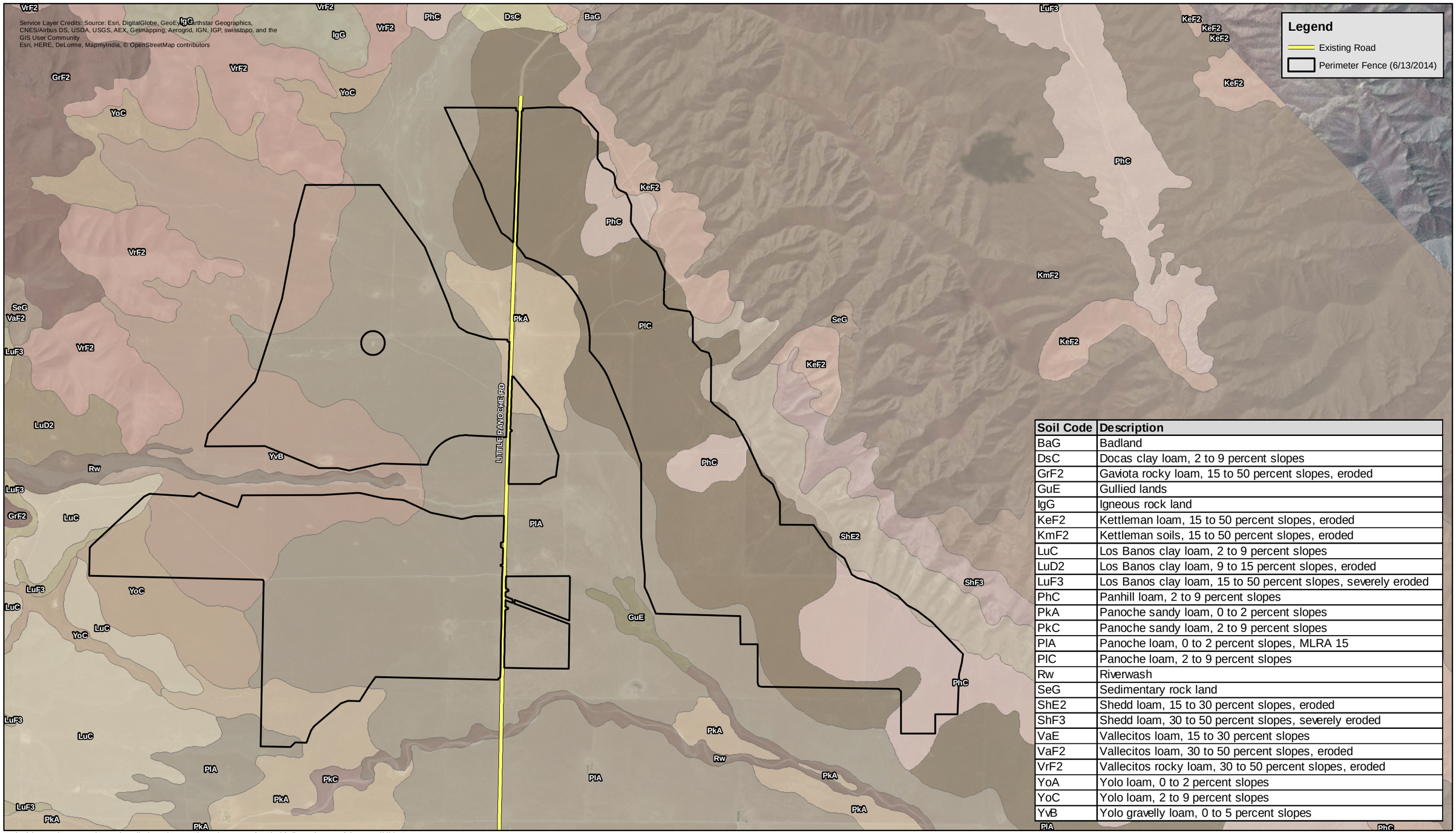
**Site Vicinity**
**Panoche Valley Solar Project**
**San Benito County, CA**

1 inch = 2,000 feet
0 500 1,000 2,000
Feet

N

**FIGURE**
**2**




| Soil Code | Description |
|---|---|
| BaG | Badland |
| DsC | Docas clay loam, 2 to 9 percent slopes |
| GrF2 | Gaviota rocky loam, 15 to 50 percent slopes, eroded |
| GuE | Gullied lands |
| IgG | Igneous rock land |
| KeF2 | Kettleman loam, 15 to 50 percent slopes, eroded |
| KmF2 | Kettleman soils, 15 to 50 percent slopes, eroded |
| LuC | Los Banos clay loam, 2 to 9 percent slopes |
| LuD2 | Los Banos clay loam, 9 to 15 percent slopes, eroded |
| LuF3 | Los Banos clay loam, 15 to 50 percent slopes, severely eroded |
| PhC | Panhill loam, 2 to 9 percent slopes |
| PkA | Panoche sandy loam, 0 to 2 percent slopes |
| PkC | Panoche sandy loam, 2 to 9 percent slopes |
| PlA | Panoche loam, 0 to 2 percent slopes, MLRA 15 |
| PlC | Panoche loam, 2 to 9 percent slopes |
| Rw | Riverwash |
| SeG | Sedimentary rock land |
| ShE2 | Shedd loam, 15 to 30 percent slopes, eroded |
| ShF3 | Shedd loam, 30 to 50 percent slopes, severely eroded |
| VaE | Vallecitos loam, 15 to 30 percent slopes |
| VaF2 | Vallecitos loam, 30 to 50 percent slopes, eroded |
| VrF2 | Vallecitos rocky loam, 30 to 50 percent slopes, eroded |
| YoA | Yolo loam, 0 to 2 percent slopes |
| YoC | Yolo loam, 2 to 9 percent slopes |
| YvB | Yolo gravelly loam, 0 to 5 percent slopes |

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**Soil Map**
**Panoche Valley Solar Project**
**San Benito County, CA**

1 inch = 2,000 feet
0 500 1,000 2,000 Feet

N

**FIGURE 3**

## 2.0 REVEGETATION AREAS

Subsurface and temporary disturbance areas proposed at the Project site are described in Table 1 below and shown in Figure 4. Of the approximately 2,506 acres of the Project site, active grading and revegetation will occur in approximately 504 acres and include the following categories: Graded Areas, Detention Ponds, Channel and Slope Revegetation Areas, AC and DC Trenching, Laydown Areas (considered temporary disturbance), and Temporary Water Ponds. The remaining portions of the Project site will not require subsurface disturbance to accomplish site construction. It is expected that equipment driving over these areas for installation of facilities will not disrupt the seed bank to a level that will require revegetation in the interstitial space around panels.

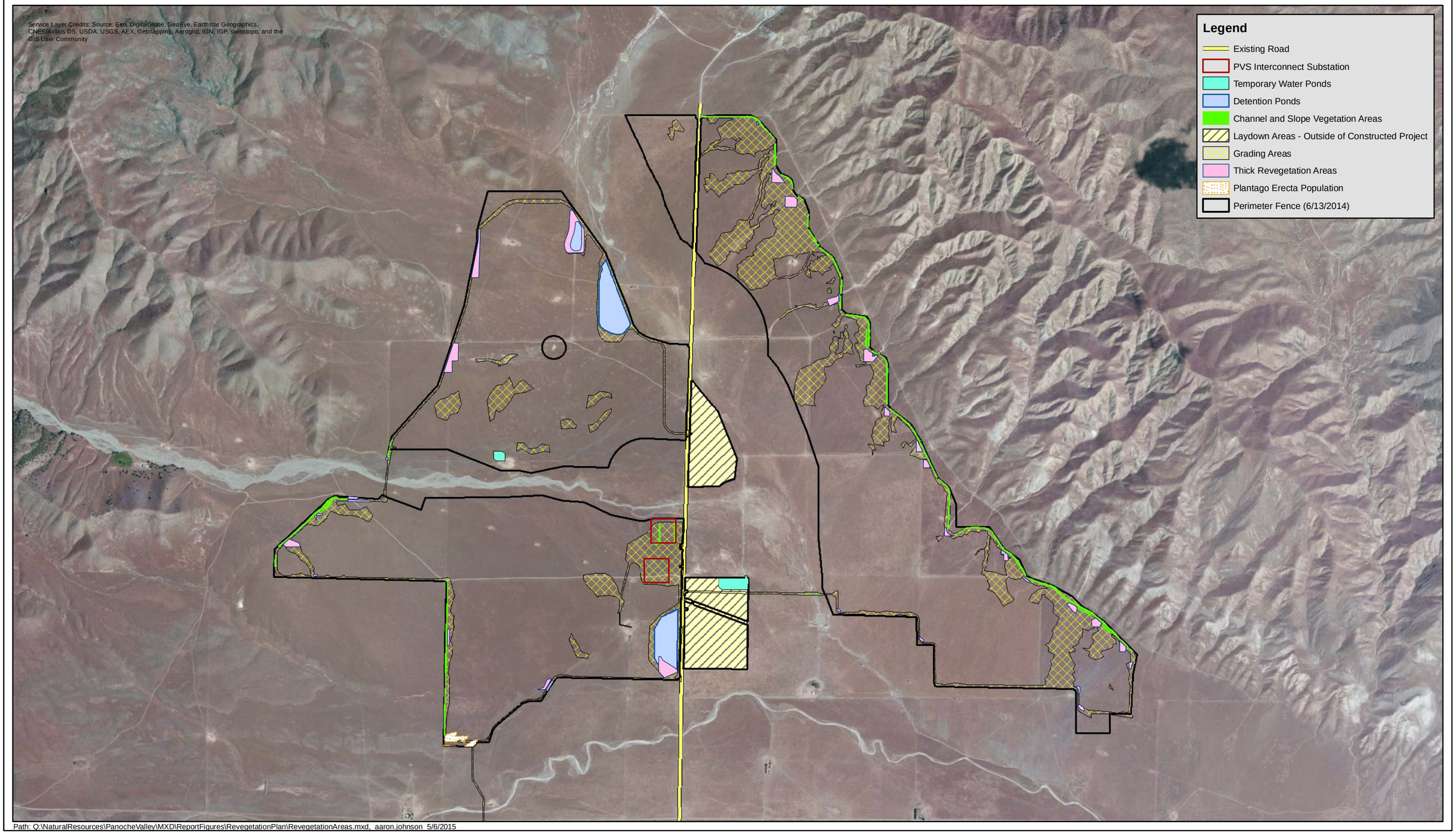
Graded Areas describe primarily where elevation changes are required to allow for construction of PV cells and other Project related structures and include approximately 316.1 acres of grading. Detention Ponds will be constructed to periodically contain stormwater during the operational phase of the Project and include approximately 33.6 acres. Temporary Water Ponds include approximately 5.1 acres and will be used during construction to contain short term stormwater flows. These temporary ponds will then be restored to pre-construction contours when complete. Laydown Areas include approximately 100.4 acres and will be used during construction for equipment and material staging. The Laydown Areas will be returned to preconstruction contours after construction and are considered temporary disturbance areas, (Figure 4). After completion of Project construction, the Laydown Areas will not be considered part of the constructed Project area and will be returned to natural habitat per methods outlined in this HRRP. Channel and Slope Revegetation Areas are portions of the Graded Areas that will require a different revegetation approach to the rest of the Graded Areas to control erosion, as described below in Sections 3.4.5.4 and 3.4.5.5.

Trenching will occur where cables are buried between panel rows and between panel blocks and the substation. These areas are not shown in Figure 4 due to the small scale of proposed impacts scattered throughout the site (approximately 35 acres combined for AC and DC trenching). Trenches will be backfilled and revegetated similar to Graded Areas as described in Section 3.4.5.3 below.

This HRRP details the necessary actions to revegetate these areas to a level equivalent to or better than pre-project conditions as described in MM BR-G.3. The revegetation actions will incorporate seed mixes that meet the goals of the revegetation activity to stabilize soil, manage drainage and erosion, and for habitat value (i.e. minimizing invasive weed populations).

**Table 1.**
**Revegetation Areas**

| Disturbance | Acres |
|---|---|
| Graded Areas | 316.1 |
| Detention Ponds | 33.6 |
| Temporary Water Ponds | 5.1 |
| Laydown Areas (Temporary Disturbance) | 100.4 |
| Channel and Slope Revegetation Areas | 13.9 |
| AC and DC Trenching | 35.2 |
| Total | 504.3 |

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**Revegetation Areas**
**Panoche Valley Solar Project**
**San Benito County, CA**

1 inch = 2,000 feet
0 500 1,000 2,000
Feet

N

**FIGURE**
**4**

# 3.0 SOIL RESTORATION PLAN

As discussed in Section 1.2.1, a soils report was prepared by ENGEO in 2010 and updated by Kleinfelder in 2014. Kleinfelder observed no significant depth of topsoil or organic soils in test pits. This observation was confirmed by Amec Foster Wheeler Restoration Ecologist Clayton Kraft during the March 2015 site visit. He also observed the surface of the site to be so compacted that any large scale salvage of soils containing the existing seed bank would not be feasible. Additionally, non-native species predominate the existing plant species composition and the sites are not characterized as Grade One agricultural soils. Given these factors, topsoil salvage is not anticipated to occur on the majority of the Project site. The potential exception is a 2.2 acre area in the southwest corner of the site which contains a native stand of dot seed plantain (*Plantago erecta*) (Figure 4). Substantial disturbances to soils in this area are not anticipated, however if they occur the following measures will be taken as described in MM BR-G.3 to attempt to salvage the seed bank: soil will be salvaged to a depth of 3-12 inches and stockpiled until construction is complete (not more than 2 years), then replaced and recontoured to pre disturbance conditions. The area will then be reseeded with dot seed plantain as described in Section 3.4.5.6 of this document. In addition, soils will be treated as follows to maximize revegetation efforts:

- Where compaction, rutting, or crushing occurs, soil will be worked with a harrow, disc, spring, tooth, chisel plow, or similar implement as appropriate prior to seeding.
- Where cables are buried, trenching will occur. Removed soils will be placed next to trenches, and trenched areas will be refilled with the excavated soil as cables are buried.

# 4.0 PLANT RESTORATION AND REVEGETATION PLAN

## 4.1 Introduction

The potential for successful revegetation at the Project site is enhanced by identifying soil plant growth potential, selecting appropriate plant species, using appropriate site preparation techniques, amending the soil if needed, and implementing an arid-land revegetation strategy. This revegetation plan addresses these evaluative measures, and specifies the methods and techniques to be implemented to optimize success of the revegetation efforts.

## 4.2 Goals

MM BR-G.3 outlines the following goals for the HRRP:

**Develop and Implement an HRRP**
The Applicant shall restore disturbed areas to pre-construction conditions or better. Prior to the issuance of a building permit and removal of any soil or vegetation, the Applicant shall retain a County-approved, qualified biologist(s), knowledgeable in the area of annual grassland habitat restoration, to prepare an HRRP. The biologist would also be responsible for monitoring the initial implementation of the plan as the Applicant's attainment of the established success criteria. The purpose of the HRRP will be to explicitly identify the process by which all disturbed areas shall be restored to at least pre-construction conditions.

**Plant Restoration and Revegetation Plan**
The species palate proposed for restoration/revegetation shall include a combination of native and non-native (based on current species composition in the restoration/revegetation areas) annual grasses and annual herbaceous species known to occur in the area. Due to the large nonnative annual grass component currently present within most of Project area the intent of the HRRP is to introduce as many native species as possible recognizing that the colonization of the site by non-native annual grasses is likely. Areas subject to restoration/revegetation shall be monitored to assess conditions and to make recommendations for successful habitat establishment.

**Monitoring Plan**
Monitoring shall be performed by County-approved, qualified biologist(s) knowledgeable in the area of annual grassland habitat restoration. Criteria for successful restoration/revegetation of temporarily disturbed areas shall be percent cover equal to that of preconstruction levels or better. This percentage shall include no more than a 10 percent non-native component, with the exception of intentionally/or naturally seeded non-native grasses that occurred in the area prior to site disturbance.

This HRRP incorporates these requirements, and also addresses the unique challenges of a revegetation action that is to be self-sustaining in the context of the on-going operation of a solar array.

Specifically, these challenges include selection of seed blends that are formulated to include species that:

- are native to the specific site or region
- will establish quickly to help curtail wind and water erosion
- can tolerate little or no irrigation
- can tolerate shading if under solar panels
- be somewhat maintenance free with a low stature
- meets the criterion of achievement of applying revegetation actions as needed to establish pre-project conditions

## 4.3 Determination of Appropriate Soil Characteristics

Most of the soils on site currently support healthy, albeit non-native plant communities, so it is assumed that there are no soil-related obstacles to revegetation (i.e., excessive salinity). This is supported by the soil and geotechnical reports (ENGEO, 2010; Kleinfelder, 2014).

## 4.4 Revegetation Methods

### 4.4.1 Overview and Timing of Revegetation Activities

Revegetation will consist of seeding on areas of subsurface disturbance only, which is anticipated to be approximately 504 acres of the Project site. The remaining area will be relatively undisturbed, leaving any organic material, the existing seed bank, and the roots of vegetation intact, thus re-seeding in these areas will not be necessary. Seeding will be accomplished at a point in the construction schedule that optimizes access to disturbed portions of the site for seed distribution and optimizes the use of natural rains to aid in germination and growth. Revegetation in the disturbed areas will consist of soil preparation and the introduction of additional seed to the site. The method of seeding will be broadcasting or hydroseeding, depending on the area to be revegetated.

### 4.4.2 Seed Procurement and Storage

A reputable supplier will provide seed for the Project. As described in MM BR-G.3:

- Seed should be sourced from the project region or from within a 25 mile radius, if possible, and within 1,000 feet elevation of the Project site.
- Seed must be tested for purity, germination percentage, number of live seed per pound, and weed seed content by the supplier.
- The seed supplier must provide three references with a bid proposal including the name and year of projects as well as contact name and telephone number.

Seed should be delivered to the site as near to the time of seeding as possible. When storing seed it should be kept in a cool, dry location free from rodents.

Potential native seed suppliers identified in preparation of this HRRP include:

**S&S Seeds**
Po Box 1275
Carpinteria, CA 93104-1275
Phone: (805) 684-0436
Fax: (805) 684-2798

**Pacific Coast Seed**
533 Hawthorne Place
Livermore, CA 94550
Phone: (925) 373-4417
Fax: (925) 373-6855

Given the remoteness of the site, it is not a typical seed collection area for native seed suppliers and obtaining enough locally collected seed may not be feasible given the predominance of non-natives. Thus, it may be necessary to utilized seed grown in the native seed supplier's nursery to obtain the native species mix and quantities recommended in this HRRP.

### 4.4.3 Site Preparation

Site soil preparation could be necessary where excessive compaction may occur from heavy equipment and vehicle traffic. On areas that do not receive heavy traffic either prior to or during construction, no decompaction is necessary. For heavily used areas that are to be seeded, such as Laydown Areas or temporary roads, decompaction may be required. A qualified Restoration Ecologist will determine where decompaction is necessary prior to the seeding efforts.

Ripping or disking may be used on compacted areas to allow for good plant establishment through loosening of the soil and improving soil to seed coat contact. Along temporary access routes and constructed Channel/Slope Areas, soil treatment may improve revegetation; even in such a linear fashion, a good establishment of plants can reduce wind erosion, and can ameliorate water erosion from the edges of the compacted roadways. Installation of ground-mounted solar arrays should not result in compaction and no surface treatment is proposed for Graded Areas that are not heavily traveled by equipment.

Where possible and necessary as determined by the Restoration Ecologist, soils will be disked or ripped to a depth below where the compaction occurred in order to increase water infiltration and provide a firm seedbed for good soil-to-seed contact.

### 4.4.4 Seeding Methods

#### 4.4.4.1 Broadcast Seeding

Broadcast seeding is a technique widely used in turf applications or land restoration over large areas and will be used here on Laydown Areas and trenched surfaces. During broadcast seeding, seed and carrier is thrown out of the bottom of a large hopper as a tractor pulls the seeder. Broadcast seeding of a seed mix requires a carrier to enhance even spreading of seeds of various size as well as providing organic material to cover the seed which offers some protection from wind erosion and predation. Sterile rice hulls are commonly used as a seed carrier at two parts rice hulls per one part of seed per unit volume. Broadcast seeders can be adjusted for seed size, desired seeding rate, and width of seed spread. Broadcasting should be done in late fall or early winter, as close as possible to the start of the winter wet season. If broadcast seeding is used on Graded Areas it should be performed before panel installation, as the pulling vehicle and seeder have minimal maneuverability. Therefore, this seeding method may not be feasible on large portions of the site.

Broadcast seeding is cost effective and can be performed quickly, however it leaves the seed unprotected until precipitation imbeds the seed in the soil for germination. A seed bed can be prepared with a dethatcher to scarify, or, create small furrows to contain the seed, and the seeded area can be dethatched again, rolled, or dragged to incorporate seed into the soil, maximizing soil to seed coat contact and reducing predation from rodents and birds.

#### 4.4.4.2 Hydroseeding

During hydroseeding, seed is mixed into a slurry with water, fiber mulch, and tackifier and is pumped under pressure through a nozzle and sprayed over bare ground. The slurry dries and sticks to the soil holding the seed in place for a time. The seed is mostly covered by the fiber mulch which simulates contact with the soil. Hydroseeding should be performed as close to the onset of the wet season as possible, however the timing is not as critical as that of broadcast seeding.

Hydroseeding is more costly than broadcasting and can be performed relatively quickly. It does offer the seed some protection against wind and water erosion for a short time, as well as predation. An added benefit is that the slurry can be directed where needed, such as under panels, or on the banks of ponds and channels.

Hydroseeding however reduces the chance of the seed making contact with the soil before germination, thus reducing overall germination rates. Hydroseeded areas should be kept free of disturbances like foot and vehicle traffic as these activities disrupt the mulch and tackifier bonding and leaves seed and mulch subject to wind and water erosion. For this reason hydroseeding is a good revegetation method for areas such as under panel arrays where disturbance is unlikely.

### 4.4.5 Plant Palettes and Planting Methodologies

The species composition for the seed mixes in the following Tables is based on local expert knowledge, a review of applicable documents, and of consideration of the revegetation Project goals. The seed palettes specified in the Tables thus include species found on the site or nearby, as well as incorporating local native species that are known colonizers and soil builders that have low stature and will likely result in adequate ground coverage. Per the goals of the HRRP, emphasis is placed on revegetating with native species.

#### 4.4.5.1 Graded Areas

Graded Areas will be subject to permanent subsurface disturbance as soil will be removed and redistributed to provide a more level surface for Project construction (Figure 4). Graded Areas will be especially susceptible to erosion and re-invasion by non-natives since it will be left essentially bare, therefore a moderate seed duty of 15 pounds live seed (PLS) is suggested per acre. Table 2 recommends a seed mix that contains a variety of perennial grasses for long term stability, as well as annual species for more immediate short term vegetative coverage, while keeping the mature height below 2 feet to minimize the maintenance needs below panels. Substitute species, when included, may replace seeds that are not available, or are exorbitantly costly as approved by a qualified Restoration Ecologist.

**Table 2.**
**Seed Mix 1.**

| Botanical Name | Common Name | Life Cycle | Mature Height | Duty - PLS |
|---|---|---|---|---|
| *Distichlis spicata* | saltgrass | perennial | 1.1 feet | 3 |
| *Heliotropium curassivicum* | salt heliotrope | perennial | 0.5 feet | 1 |
| *Poa secunda* | one sided bluegrass | perennial | 1.5 feet | 2 |
| *Croton setigerus* | dove weed | annual | 1.5 feet | 2 |
| *Deschampsia danthonioides* | annual hairgrass | annual | 1.5 feet | 0.5 |
| *Eschscholzia caespitosa* | tufted poppy | annual | 1 feet | 0.5 |
| *Lasthenia californica* | goldfields | annual | 0.5 feet | 0.5 |
| *Lotus wrangelianus* | California lotus | annual | 1.5 feet | 2 |
| *Lupinus succulentis* | arroyo lupine | annual | 2 feet | 1 |
| *Triclostema lanceolata* | vinegarweed | annual | 1.5 feet | 1 |
| *Vulpia microstachys* | annual fescue | annual | 1.5 feet | 1.5 |
| Total Seed Weight PLS per acre | | | | 15 |
| Substitute Species | | | | |
| *Bromus carinatus* | California brome | perennial | 3 feet | |
| *Cynadon dactylon*** | bermuda grass | perennial | 1 feet | |
| *Lolium multiflorum*** | Italian rye grass | annual | 2 feet | |

Notes:
** denotes non-native species
PLS – pounds live seed

It is recommended that Graded Areas be hydroseeded prior to panel installation, but hydroseeding can also be performed around support structures. Since the Graded Areas will be relatively flat, a minimum rate of hydromulch and tackifier can be used. A rate of 500 pounds of mulch and 125 pounds of tackifier per acre will be sufficient to keep seed in place. As a secondary seeding method broadcasting can be employed on Graded Areas if the activity can be timed to be performed at the onset of the wet season, and if space allows for efficient maneuvering of the vehicle and seeder to be used.

#### 4.4.5.2 Laydown Areas

Laydown Areas will be disturbed temporarily (except where permanent O&M facilities will be constructed) but will be especially susceptible to erosion and re-invasion by invasive species since subsurface disturbance and heavy vehicle traffic will leave these areas essentially bare. Therefore a moderate seed duty of 15 PLS is suggested per acre of Seed Mix 1, Table 2. It is important to perform seeding activities at a time just prior to the wet season in the late fall to protect seeds from erosion and predation for extended periods. Since these areas will be open and free of obstacles broadcast seeding should be utilized, however hydroseeding is an acceptable secondary method if future disturbance while seeds become established is not anticipated.

#### 4.4.5.3 Trenched Areas

Trenching for underground infrastructure will leave small areas essentially bare post construction. Due to the linear nature of trenched areas hand broadcasting is the most effective method of reseeding using Seed Mix 1, Table 2. As the trench is backfilled and smoothed a dedicated person can spread seed manually and track in by foot or use a small lawn roller to imbed seed into the softened soil. Hydroseeding could also be used along the trenched areas with the minimum slurry mix as stated for Graded Areas.

#### 4.4.5.4 Channel and Slope Areas

Drainage channels with sloped banks will be constructed around the perimeter of portions of the Project site. They will be constructed along the entire eastern boundary of the Project where the foothills reach the valley floor to capture runoff anticipated during the wet season. Drainage channels will also be constructed in shorter segments along the western site boundary. These Channels and Slope Areas will require a heavier seed burden as described in Seed Mix 2, Table 3 to help reduce flow velocities and trap sediments. They are expected to receive more water than areas treated with Seed Mix 1 but still be subject to a maintenance regime. The same species can be used as in Seed Mix 1 with the addition of purple needlegrass (*Nassella pulchra*) and higher rates per acre of some species to provide increased stability where erosion is more likely to occur from water and wind.

**Table 3.**
**Channel and Slope Areas, Seed Mix 2**

| Botanical Name | Common Name | Life Cycle | Mature Height | Duty - PLS |
|---|---|---|---|---|
| *Distichlis spicata* | saltgrass | perennial | 1.1 feet | 2 |
| *Heliotropium curassivicum* | salt heliotrope | perennial | 0.5 feet | 1 |
| *Nassella pulchra* | Purple needlegrass | perennial | 3 feet | 5 |
| *Poa secunda* | one sided bluegrass | perennial | 1.5 feet | 3 |
| *Croton setigerus* | dove weed | annual | 1.5 feet | 2 |
| *Deschampsia danthonioides* | annual hairgrass | annual | 1.5 feet | 1 |
| *Eschscholzia caespitosa* | tufted poppy | annual | 1 feet | 1 |
| *Lasthenia californica* | goldfields | annual | 0.5 feet | 0.5 |
| *Lotus wrangelianus* | California lotus | annual | 1.5 feet | 2 |
| *Lupinus succulentis* | arroyo lupine | annual | 2 feet | 1.5 |
| *Triclostema lanceolata* | vinegarweed | annual | 1.5 feet | 1 |
| *Vulpia microstachys* | annual fescue | annual | 1.5 feet | 2.5 |
| Total Seed Weight PLS per acre | | | | 22.5 |
| **Substitute Species** | | | | |
| *Bromus carinatus* | California brome | perennial | 3 feet | |
| *Cynadon dactylon*** | bermuda grass | perennial | 1 feet | |
| *Lolium multiflorum*** | Italian rye grass | annual | 2 feet | |

Notes:
** denotes non-native species
PLS – pounds live seed

Channel and Slope Areas are best revegetated utilizing hydroseeding as the seed slurry can be directed onto banks with minimal impact to the constructed features. The hydromulch and tackifier will help to control erosion until vegetation growth occurs. Channel slopes will require more hydromulch and tackifier than level areas. A recommended rate of 1,000 pound of mulch and 150 pounds of tackifier per acre are suggested.

#### 4.4.5.5 Thick Revegetation Areas for Water Crossings and Detention Pond Bank Areas

Thick Revegetation Areas are proposed where ephemeral streams and jurisdictional waters cross the site perimeters. Seeding at these areas will provide stabilization from water erosion and will remain undisturbed by maintenance practices once seeded. Detention Ponds will impound stormwater temporarily. These areas will be graded and their banks require revegetation for stability. Both types of areas require a unique seed mix that will thrive in wetter areas and create a denser more natural vegetation stand (Seed Mix 3, Table 4). Perennial grasses will stabilize pond banks without adding a large amount of biomass, while annual species adapted for wet areas will provide vegetative cover to further protect against erosion. A high seed duty of 32 PLS per acre is suggested to create dense cover in these areas. Hydroseeding is the recommended method of seed dispersal due to the directional ability of this method. The same slurry mix as used for Graded Areas (500 pounds of mulch and 125 pounds of tackifier per acre) is suitable for these areas. Broadcast seeding could also be performed by hand or by a small maneuverable broadcaster.

**Table 4.**
**Thick Revegetation Areas for Water Crossings and Detention Pond Bank Areas, Seed Mix 3**

| Botanical Name | Common Name | Life Cycle | Mature Height | Duty - PLS |
|---|---|---|---|---|
| *Distichlis spicata* | saltgrass | perennial | 1.1 feet | 6 |
| *Melica imperfecta* | California melic | perennial | 3 feet | 5 |
| *Nassella pulchra* | purple needlegrass | perennial | 3 feet | 10 |
| *Amaranthus blitoides* | prostrate pigweed | annual | 1 feet | 1 |
| *Deschampsia danthonioides* | annual hairgrass | annual | 1.5 feet | 3 |
| *Juncus bufonius* | toad rush | annual | 1 feet | 4 |
| *Trifolium variegatum* | few flowered clover | annual | 1 feet | 1 |
| Total Seed Weight PLS per acre | | | | 32 |
| **Substitute Species** | | | | |
| *Artemisia douglasiana* | mugwort | perennial | 4 feet | |
| *Iva axillaris* | poverty weed | perennial | 4 feet | |

Notes:
PLS – pounds live seed

#### 4.4.5.6 Dot Seed Plantain Area

Dot seed plantain (*Plantago erecta*) is a native plant species and a small, 2.2 acre, patch occurs in the southwest corner of the facility (Figure 4). If this area is subject to disturbance that does not entail installation of permanent Project features, it can be revegetated by salvaging topsoil and seeding with dot seed plantain. A rate of 10 PLS per acre is suggested to revegetate this species once topsoil is replaced. If no disturbance occurs in this area, no action is suggested.

### 4.4.6 Timing of Seeding

The timing of seed dispersal is important to prevent undue damage to seed resources by erosion, predation, and degradation. Broadcast seeding methods need to be performed at the onset of the wet season to avoid prolonged exposure to the elements and predators. The wet season normally occurs from November through April in the region. Hydroseeding can be performed out of season, but it is preferable to carry out as close to the onset of the wet season as construction schedules allow to protect seed resources and maximize germination rates.

### 4.4.7 Irrigation Contingencies and Fertilizer

Adequate seasonal rainfall is an important factor in seeding success. If the region does not receive close to average rainfall quantities over the course of the wet season, a qualified Restoration Ecologist will make a thorough site assessment and determine if supplemental irrigation is necessary. If deemed necessary, water trucks will be employed to deliver water via side sprayers to wet revegetated areas enough to foster seed germination and plant development, about 3 inches in depth. All areas will require assessment for irrigation in well below average precipitation years for the first year of vegetation development.

No fertilization is suggested due to the non-native dominance throughout the sites and the ability of non-native annuals to utilize excess nutrients much faster than native species. However, based on an assessment by a qualified Restoration Ecologist, should vegetation growth be delayed after seeding, and rapid development of vegetation cover is needed for erosion control in specific areas, fertilizer could be used in conjunction with weed control efforts to provide cover in those areas.

### 4.4.8 Erosion Control

Soil should be maintained on the site using temporary erosion control devices such as silt fences, fiber rolls, and check dams as necessary to prevent sediment from leaving the site as specified in the Stormwater Pollution Prevention Plan. Adequate vegetative cover will control erosion on a large scale, however isolated areas may develop rills or gullies due to site modification such as grading. Erosion control inspections would be made before and after large storm events and areas identified as erosive would be stabilized with an appropriate method as designated by a Certified Inspector of Sediment and Erosion Control and as designated in the Stormwater Pollution Prevention Plan.

### 4.4.9 Non-Native and Invasive Species Control

Despite native species seeding and the expected re-invasion of existing weedy species on the Project area, care is needed to prevent establishment of weeds that may be more invasive t than those currently present. More vigorous weed invasions are likely with disturbance and could cause severe problems by shading panels, restricting access, and spreading with direct or indirect irrigation. A qualified Restoration Ecologist will inspect the site in accordance with the Project Weed Control Plan. The Cal-IPC designates classes of invasiveness as low, moderate, and high. Moderate and highly invasive species should be identified and treated per the Project Weed Control Plan.

# 5.0 MONITORING PLAN

Revegetated areas will be monitored to assess conditions and to make recommendations as necessary for successful habitat establishment. Monitoring will be conducted by a qualified Restoration Ecologist or Biologist knowledgeable in annual grassland habitat restoration. Monitoring will consist of both qualitative and quantitative monitoring methods and will continue for five years or until success criteria have been met.

## 5.1 Qualitative Monitoring

Qualitative monitoring will be conducted to assess the overall conditions of the revegetation sites, both within and outside of the permanent Project area, and to identify any problems that may prevent successful vegetation establishment. Qualitative monitoring of revegetated areas will be conducted, at a minimum, on a monthly basis for the first year following distribution of seed and will continue on a quarterly basis thereafter, until final approval of the revegetation effort. Qualitative monitoring will include observations of growth and survival, germination success, reproduction, plant fitness and health, pest problems, herbivory problems, invasive species presence, and wildlife use.

Qualitative monitoring reports will include a description of site conditions and progress and summarize findings. Reports will also indicate any issues or problems that may impede the success of the revegetation effort and include recommendations regarding remedial work or maintenance necessary to correct problems.

## 5.2 Quantitative Monitoring

Quantitative monitoring will be conducted annually for revegetation areas that lie outside of the permanent Project area (Figure 4 - Laydown Areas) to measure development of vegetation within the habitat restoration sites and determine if they are progressing toward ultimate success criteria by year five. Quantitative monitoring will be conducted during the spring months of each year (dependent on optimal weather conditions) to coincide with the blooming periods of the greatest number of plant species. If success criteria are met prior to year five, quantitative monitoring may conclude in prior years per MM BR-G.3.

Quantitative monitoring will consist of sampling a series of one-square-meter quadrats along transect lines that have been placed randomly in each of the revegetation areas. Transect lines and quadrat locations will be established and recorded with GPS coordinates in year one for repeatable data collection in subsequent years. Five 100-meter transects will be established randomly per Laydown Area, and five quadrats will be sampled along the transects at end points and at 25, 50, and 75 meter intervals. Total percent cover and percent cover of each plant species present in the quadrats will be estimated and recorded. This data will be used to determine growth performance, native and non-native species cover, seed germination, native species recruitment and reproduction, and species diversity. Species observed during the quadrat sampling that fall outside of a quadrat will be recorded and included on the list of species observed at each transect location. Based on these results, any necessary recommendations for maintenance and/or remedial work will be made by the Restoration Ecologist.

## 5.3 Success Criteria

Success criteria shall be based on the following: 1) Cover shall be equal to that of pre-construction conditions or better, and 2) Cover shall include no more than 10% non-native invasive species with the exception of intentionally seeded or naturally seeded non-native grasses or forbs that were present prior to site disturbance. Since moderate to highly invasive species, such as red brome, are present in some quantity (15% to 25% based on 2015 assessment) on site prior to construction, no contingency is needed to eliminate this or similar species. Invasions by new species, not previously documented on site, and species that are of concern per the Project Weed Control Plan will be considered as "non-native cover" for determining success criteria and for determining the necessity for implementing control measures to achieve success criteria. Invasive species control measures will be carried out per the Project Weed Control Plan.

## 5.4 Reporting

Quarterly reporting will include progress reports that summarize site status and recommended remedial measures as necessary. The reports will include estimated species coverage and diversity, species health and vigor, the establishment of volunteer native species, topographical and soil conditions, problem weed species, site use by wildlife species, evidence of drought stress, and any recommended remedial measures needed to achieve performance criteria. These reports will be submitted on a quarterly basis with the exception of the quarter immediately preceding the annual report.

Annual reporting will include species coverage and diversity as measured during the quantitative monitoring event, attainment or non-attainment of success criteria, species health and vigor, the establishment of volunteer native species, hydrological and topographical conditions, site use by wildlife species, and the presence of invasive weed species. The annual reports will also include remedial measures deemed necessary to achieve future compliance with success criteria. Annual reports will be submitted by December 31$^{st}$ of each year, following implementation of this HRRP, for the duration of the monitoring period.

Annual reports will include, at minimum, the following:

1. The name, title, and company name of all personnel involved in restoration monitoring and report preparation,
2. Maps or aerials showing restoration areas, transect locations, and photo documentation locations,
3. A description of the methods used to perform the work, including the number of acres treated for removal of non-native plants, and
4. An assessment of non-native treatment success.

# 6.0 FINAL CLOSURE PLAN

## 6.1 Final Infrastructure Removal

Removal of all above ground infrastructure is expected to occur upon decommissioning of the facility. Additionally all infrastructure below ground to a depth of 3 feet would be removed, including utilities, concrete pads, and any other foreign items.

## 6.2 Restoration

After removal of infrastructure, the sites will be recontoured to pre-construction conditions restoring natural topography and hydrology to the area.

## 6.3 Revegetation

After recontouring of the sites, revegetation will take place on any soils left bare or vulnerable by infrastructure removal activities. Seeding methods and mixes such as those proposed for revegetation post construction should be used in the appropriate areas. Since this activity will occur several years from now, a qualified Restoration Ecologist will prepare a more detailed Final Closure Plan including recommendations for seed mixes and duties based on the current site conditions and what is needed to restore vegetation. In accordance with milestones outlined in BR-G.3, the detailed Final Closure Plan (separate plan from this HRRP) will be prepared for County review and approval one year prior to the start of ground disturbance associated with Project decommissioning.

Based on current cost models, it is anticipated that the costs of restoration, revegetation, and monitoring to fully restore impacted soil and vegetation communities will be 100% offset by the cost recovery for recycling the panels, steel, and other equipment at the solar facility.

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# Panoche Valley Solar
# San Joaquin Antelope Squirrel Relocation and Translocation Plan

Panoche Valley Solar Project

San Benito County, California

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Revised December 1, 2015

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**Table 1 SJAS Observations on the Panoche Valley Solar Project**

## DEFINITIONS

| | |
|---|---|
| Biological Monitor | Observers that work onsite to perform biological surveys and provide oversight of ground disturbing activities as needed; receive instruction from and reports to the Designated Biologist(s). Minimum education level of four-year degree in biological sciences, environmental sciences, or equivalent combination of education and experience. |
| Conservation Lands | Three large parcels of land to offset potential impacts as part of a conservation package consisting of the permanent preservation and management of those parcels (Valley Floor Conservation Lands, Valadeao Ranch Conservation Lands, and Silver Creek Ranch Conservation Lands). |
| Designated Biologist | Biologist knowledgeable and experienced in the biology, and natural history of the special-status species on the Project and shall be responsible for monitoring construction activities to help minimize and fully mitigate or avoid the incidental take of individual species and to minimize disturbance of special-status species' habitat. This biologist may appoint biological monitors to perform biological surveys or provide oversight of ground disturbing activities as needed in their place. |
| Project Footprint | The portion of the project that includes the solar arrays and associated roads and equipment, totaling 2,492 acres. |
| PVS | Panoche Valley Solar Facility; name of the proposed project. |
| Study Area | Project Footprint and Conservation Lands are collectively referred to for this relocation and translocation plan. |

# ACRONYMS

| | |
|---|---|
| BNLL | Blunt-nosed Leopard Lizard |
| CDFW | California Department of Fish and Wildlife |
| CESA | California Endangered Species Act |
| FEIR | Final Environmental Impact Report |
| GPS | Global Positioning System |
| GKR | Giant Kangaroo Rat |
| MW | megawatt |
| PV | photovoltaic |
| PVC | Polyvinyl chloride |
| SCRCL | Silver Creek Ranch Conservation Lands |
| SJAS | San Joaquin Antelope Squirrel |
| USFWS | U.S. Fish and Wildlife Service |
| VFCL | Valley Floor Conservation Lands |
| VRCL | Valadeao Ranch Conservation Lands |

## 1.0 Introduction

Panoche Valley Solar, LLC proposes to construct and operate a solar photovoltaic (PV) energy generating facility located in San Benito County, California that will generate approximately 247-megawatt (MW) (Figure 1). This project is called the Panoche Valley Solar Facility (PVS) Project (Proposed Project). The Proposed Project will include some unavoidable impacts on San Joaquin antelope squirrels (*Ammospermophilus nelsoni*; SJAS); located within the boundaries of the Proposed Project Footprint. This relocation and translocation plan has been developed to minimize the unavoidable impacts due to the construction of the Proposed Project on recommendations from the California Department of Fish and Wildlife (CDFW).

The proposed solar site construction footprint (Project Footprint) contains approximately 2,153 acres of presently grazed (cattle and sheep) land in the Panoche Valley of eastern San Benito County, California (Figure 2). The Proposed Project would also include approximately 25,618 acres of high quality Conservation Lands that are primarily contiguous with the approximately 2,153-acre Project Footprint (Figure 3). These high quality lands are the Valley Floor Conservation Lands (VFCL), Valadeao Ranch Conservation Lands (VRCL), and Silver Creek Ranch Conservation Lands (SCRCL). The Project Footprint and Conservation Lands are collectively referred to for this relocation and translocation plan as the "Study Area".

# 2.0 Species Description

The SJAS is currently listed as threatened by the California Endangered Species Act (CESA [Fish and Game Code §§ 2050 et seq]). The species does not have its own recovery plan, but is included in the Recovery Plan for Upland Species of the San Joaquin Valley, California (USFWS 1998).

## 2.1 Historical Distribution of SJAS

The historic distribution of the SJAS included the San Joaquin Valley and the contiguous areas to the west in the upper Cuyama Valley and on the Carrizo and Elkhorn Plains (USFWS 1998). SJAS range in elevation from about 50 meters (165 feet) in the San Joaquin Valley to about 1,100 meters (3,600 feet) in the Temblor Mountains (USFWS 1998). The CNDDB has historic records of the SJAS occurring in the following USGS quadrangle maps: Cerro Colorado (1940), Hammonds Ranch (1958), Idria (1936), Mercey Hot Springs (1994), Panoche Pass (1929), Panoche (1994), and Tumey Hills (2006).

## 2.2 Characteristics of SJAS

The SJAS is one of five species of antelope squirrels. The SJAS retains a typical ground-squirrel shape with small, rounded ears and a streamlined body with relatively short legs. Average individuals range in size from about 218 to 240 mm in length and weigh 130 to 170 grams. The tail has fringes of hair that project laterally, giving it a flat appearance. It is usually held cocked or curled over the back exposing a light colored underside. Coloration is generally described as tan with a light stripe along the sides. Relatively smaller size, appearance of the tail and light stripe along the side distinguish this species from the co-occurring California ground squirrel (USFWS 1998).

SJAS live in burrows that vary in complexity and length, but generally have two to six openings and are between roughly 30 and 50 centimeters (12 to 20 inches) deep. They may live in burrows of their own construction or take over and enlarge those dug by kangaroo rats.

The SJAS live in relatively arid annual grassland and shrubland communities (i.e., *Atriplex* and *Ephedra*) in areas receiving less than 23 centimeters (10 inches) of mean annual precipitation. This species is found in higher numbers in sparse to moderate cover of shrubs. In the project area they are associated with plants such as red brome, red-stemmed filaree and California ephedra. SJAS construct burrows in predominantly loam and sandy loam soils such as those that are found in the project area (i.e., Panoche loam soil series), typically in areas that do not flood. In areas of low shrub cover, the SJAS are closely associated with GKR, including living in the burrow systems constructed by GKR (USFWS 1998).

SJAS are predominantly diurnal, with activity peaking early or late in the day. Less activity is observed when ambient temperatures drop below approximately 10 degrees Celsius (50 degrees Fahrenheit) and when higher ambient temperatures are reached, though the critical temperatures at which activity is reduced are unclear. At some locations, such as the Elkhorn Plain Ecological Reserve, observations of SJAS have been recorded during the entire day, even when ambient temperatures exceeded 42 degrees Celsius (108 degrees Fahrenheit) during July and August. Daytime activity above ground extends to most of the day during spring when temperatures are between approximately 20 to 30 degrees Celsius (68 to 86 degrees Fahrenheit).

According to the Recovery Plan for Upland Species of the San Joaquin Valley, California (USFWS, 1998) there is one breeding period for the SJAS during late winter lasting through early spring. SJAS do not breed until their second year. The gestation period is around 26 days with embryos present in late January. The number of embryos ranges from 6 to 11, averaging 8.9. After birth between March and April, young may be seen above ground roughly 30 days after birth. Young are weaned from late April to mid- or late-May (USFWS 1998).

SJAS are omnivorous, taking advantage of food and forage that is available. Green vegetation, fungi, and insects are preferred while seeds are less important in the diet. Vegetation and seeds from plants such as filaree and red brome and seeds of ephedra and saltbush are important food sources. The primary insect consumed is grasshoppers when available. In the absence of seeds and grasshoppers, SJAS will eat harvester ants. During spring SJAS will eat large quantities of ephedra seeds, particularly during severe drought (USFWS 1998).

Predators of the SJAS include hawks, falcons, eagles, snakes, kit foxes, coyotes, badgers, as well as others (USFWS 1998).

## 2.3 Site Survey Background - SJAS

Multiple biological surveys performed in the Study Area between 2009 and 2012 (total of over 20,000 survey hours) that documented the presence of SJAS in multiple locations. These surveys included: protocol-level rare plant surveys, abridged 2009 protocol-level blunt-nosed leopard lizard (*Gambelia sila*; BNLL) surveys, distance sampling, occupancy sampling, and surveys specific to GKR. Many of these surveys were conducted under conditions suitable for observation of SJAS.

A 100 % coverage survey of the Study Area was conducted and a systematic stratified sampling effort was completed on the Conservation Lands in February and March 2013 primarily targeting GKR. Field surveyors used a grid sampling system whereby 30m x 30m grid squares were evaluated for the presence of GKR sign. Grid squares were arranged along north-south running parallel transects. Surveyors visually inspected each grid square for evidence of GKR precincts. Evidence of other special status species, including SJAS, was recorded if observed.

Within the Project Footprint, the survey grid accounted for 100% coverage, plus a 500 foot buffer (in areas where landowner access was granted). The VFCL are interlaced within the Project Footprint. For this reason, the VFCL was surveyed using the same grid system as the Project Footprint and was subject to 100 percent coverage.

The SCRCL and VRCL were surveyed using the same methodology described above but with wider transects. No buffers were surveyed for the Conservation Lands since surveyors did not have landowner access outside these areas. Transects were systematically distributed across the Project Footprint and included areas previously identified as high and low suitability habitats in past studies. The SCRCL and VRCL surveys were designed to cover approximately 20-30 % of the Conservation Lands, therefore, transect spacing was approximately 148 meters.

BNLL protocol surveys were conducted during 2013 over the entire project footprint, the VFCL and a portion of the VRCL lands (approximately 500-foot buffer in suitable BNLL habitat along boundary with project footprint). Conditions were suitable for observation of SJAS during all BNLL surveys and many of the other surveys conducted for Requested Take Species associated with the PVS and Conservation Lands.

# 3.0 SJAS Occurrence Results

## 3.1 SJAS Results within Project Area

SJAS were regularly observed in the more diverse habitats on the VRCL and SCRCL during surveys conducted in 2009, 2010, and 2012 by Live Oak Associates, Inc. The entire acreage of the Conservation Lands is considered suitable mitigation for this species. Based on these results, SJAS are expected to occur on the Project Footprint in relatively numbers. Three individuals were observed within the Project Footprint during various surveys conducted in 2009, two individuals were detected on the VFCL, and seven on the VRCL during 2010 surveys. The overall population levels of this species on the VFCL and the VRCL is considered low; however, on the SCRCL, SJAS populations are considered high, with hundreds observed throughout most of the SCRCL during 2010 reconnaissance surveys, in addition, 119 were observed incidentally in a two-week period in September of 2012 (Table 1).

During the BNLL protocol surveys between June and September 2013, SJAS observations were recorded as follows: Project Footprint (30); VFCL (5) and VRCL (14) (Figure 4; Table 1). Many of these observations that were likely the same individual observed multiple times over the survey period.

Table 1: SJAS Observations on Panoche Valley Solar Project

| SURVEY PERIOD | PROJECT FOOTPRINT | VFCL | SCRCL | VRCL |
|---|---|---|---|---|
| 2009 | 3 | | | |
| 2010 | | 2 | >100 | 7 |
| 2012 | | | 119 | |
| 2013* | 30 | 5 | | 14 |

*Based on 17 site visits during BNLL surveys; therefore, observations may not represent individuals.
SCRCL was not visited during BNLL surveys

## 4.0 Discussion of Results

SJAS observations were the highest on SCRCL followed by the Project Footprint, VRCL and VFCL. Observations on the Project Footprint were only made east of Little Panoche Road. Within this portion of the Project Footprint, many of the observations were made along interior site roads. The Project Footprint contains very little typical habitat for this species as it is nearly devoid of shrubs. Potential candidate relocations sites could include areas where similarly suitable habitat is present in the adjacent VFCL and VRCL lands that have not been found to be occupied. In addition, the variable topography in potential candidate relocation sites would provide cover initially after relocation.

## 5.0 SJAS Relocation

The following SJAS conservation measures are pertinent to this plan and are consistent with those required in the Final Environmental Impact report (FEIR) (San Benito County 2010), Supplemental Environmental Impact Report (SEIR) (San Benito 2014), and the Final Incidental Take Permit 2081-2014-035-04 (CDFW 2015) for the project:

- No more than 30 days prior to the commencement of ground disturbance activities the Applicant shall retain a County-approved, Designated Biologist to supervise completion of pre-construction surveys for each phase of the project with assistance from Biological Monitors. If present, active SJAS burrows shall be flagged and ground-disturbing activities shall be avoided within a minimum of 50 feet surrounding each active burrow. If avoidance is not possible, the Applicant shall take the following sequential steps when working in such areas:

    1. Allow for one night without disturbance to the burrow and surrounding area to allow the SJAS to vacate the burrow;
    2. Antelope squirrels shall be live trapped and relocated out of impacted areas in the same manner as described in the GKR Relocation and Translocation Plan.
    3. Methods shall be taken to prevent reentry to the burrow by SJAS (and other small mammal species) until construction is complete in these areas.
    4. Once construction activities are complete access to the burrows shall be restored. If construction-related impacts would result in the crushing or destruction of a burrow then the burrow shall be excavated (either by hand or mechanized equipment under the direct supervision of the biologist, removing no more than 4 inches at a time.

Relocation and translocation procedures to implement these measures are described in Section 5.1. All individuals detected will be relocated to suitable nearby habitat as described below or allow to escape to the adjacent natural habitat. This SJAS Relocation Plan will implement methodology consistent with successful kangaroo rat relocations, with appropriate adjustments given the different requirements of this antelope squirrel species (Bender et al. 2010; Germano 2001, 2010; Germano and Saslaw 2007; Germano et al. 2009; Tennant et.al. 2013). Procedure adjustments were also developed based on experience from trapping and relocation projects in the southern portion of the species' range. The relocation methodology includes trapping to remove SJAS from the Project Footprint that will be impacted by construction activities; verification that all individuals have been detected; and hand or mechanical excavation (as appropriate) of burrows that will be unavoidably destroyed by construction activities. The SJAS will be relocated to suitable areas adjacent to the Project Footprint including unoccupied areas within the VFCL and potentially in the VRCL. It is not anticipated that the SCRCL will be used given the relatively high numbers of individuals observed on the SCRCL. Specific relocation site criteria are detailed herein.

The ultimate goal and objective of relocating SJAS is to preserve and minimize harm, injury, or death of individual SJAS during Project build-out and to possibly recolonize nearby locations where SJAS are no longer found but suitable habitat is present.

The release of or letting the SJAS to escape into nearby suitable habitat that is not occupied will create opportunities to increase the distribution of the species beyond its current locations and occupancy levels. The relocated/translocated SJAS individuals and/or populations will be monitored after the end of the construction on the Project to determine success of the relocation. Post-release trapping will be used to assess and report success of the relocation efforts.

Conducting successful relocations requires careful consideration for each animal's well-being during capture, transport, release, and successive monitoring. Risk to the animal should be minimized and acclimation and survival at the release site will be maximized by implementing accepted practices. At a minimum, the following procedures will be implemented:

## 5.1 Relocation and Translocation Procedures

Relocation and Translocation Procedures will be implemented subsequent to preconstruction surveys and will be based on survey results and any incidental observations during Project site preparation.

I. Project Site Preparation
   A. PVS or their contractor will mark work area limits with stakes and flagging;
   B. All potential SJAS burrows within the Project Footprint and a 50-foot buffer will be documented (size, location and aspect) and staked and/or flagged;
   C. Prior to any excavation, trenching, or digging associated with this Relocation Plan, the party or parties responsible for such activities will contact the Project safety personnel to ensure all safety requirements are followed (e.g. location of underground utilities);
   D. A Biological Monitor who is under the direct supervision of a Designated Biologist and that has been trained, will be present for the installation of buried wildlife exclusion fencing along the marked work area boundary intended to exclude SJAS from the Project Footprint. Fence installation will be overseen by the Designated Biologist who does not need to be present during all installation activities but should inspect fence locations prior to trenching. At the discretion of the Designated Biologist, temporary exclusion fencing that is not buried may be used to enclose areas targeted for trapping that are in the direct path of construction phase exclusion fence installation (e.g., from trenching);
   E. Exclusion fencing will consist of smooth material (such as aluminum flashing or polyvinyl chloride [PVC] jacket material) or of a design that deters SJAS from climbing over the fence. Construction-phase exclusion fence will be buried at least 24 inches deep with at least 36 inches above ground level. The buried wildlife exclusion fence will avoid all remaining covered species burrow entrances by a buffer of at least 50 feet;
   F. If determined to be necessary to minimize impacts to SJAS outside of the project perimeter, wildlife exclusion fencing will be installed along the Project boundary adjacent to SJAS occupied areas and for a distance extending for approximately 500

feet from the nearest active burrow (additional exclusion fencing may be required beyond necessary SJAS fencing to exclude other covered species);

G. If burrows potentially occupied by SJAS or other covered species cannot be avoided by at least 50 feet, the following measures to remove SJAS from such burrows prior to installation of wildlife exclusion fencing requiring trenching will be implemented at the discretion of the Designated Biologist;
    1. For SJAS occupied areas, trapping following SJAS trapping methods (below in Section II) will be conducted prior to fence installation requiring trenching. Subsequent to trapping, burrows potentially occupied by SJAS will be excavated following excavation procedures.
    2. For other covered species, avoidance and minimization measures specific to that species will be implemented prior to fence installation requiring trenching.

H. Release locations will be identified subsequent to preconstruction surveys and prior to trapping and removal activities subject to the following criteria:
    1. Captured SJAS will be relocated in neighbor groups. A SJAS will be considered within a "neighbor group" if they are within 20 meters of the nearest neighbor. Neighbor release configuration will be determined based on relative locations of captured individuals (see II.B, below).
    2. Release locations must be able to accommodate all SJAS potentially captured that are within each neighbor group.
    3. Release locations will be chosen based on the following, in order:
        a. The nearest high quality habitat in the VFCL that is unoccupied and with microtopographic features that will provide cover such that the relocated group will be at least 100 feet (approximately 30 meters) from the nearest suspected active burrow, if any are present. Former agricultural land will be targeted;
        b. If there are no candidate release locations on the VFCL within one mile of the capture location, unoccupied high quality habitat in within VRCL will be utilized. No relocations of SJAS will be completed in the SCRCL unless approved by CDFW.
        c. Subject to approval by CDFW, captured SJAS may be used to further recovery efforts for this species at locations in the greater Panoche-Ciervo area. If individual SJAS are relocated outside of PVS Conservation Lands, monitoring of relocation success would be the responsibility of the wildlife agencies.

II. SJAS Detection and Removal

The following methods are intended to result in as close to 100% depletion rates as possible with the goal of avoiding mortality of SJAS.

A. The Designated Biologist, a Biological Monitor under the direction of the Designated Biologist, or a supervised trapping crew will conduct five consecutive days of trapping

with live traps (e.g. Sherman live traps or similar live traps) to capture SJAS at burrows identified during preconstruction surveys using 20% more traps then the number of identified burrows in the trapping area, or at least one trap per 200 square foot area.

B. Data to be collected on all SJAS captured will include: (1) the locations (Global Positioning System [GPS] coordinates and maps) and the time of capture and/or observation as well as release; (2) sex; (3) approximate age (adult/juvenile); (4) weight; (5) general condition and health, noting all visible conditions including gait and behavior, diarrhea, emaciation, salivation, hair loss, ectoparasites, and injuries; and (6) ambient temperature when handled and released. Any non-listed small mammals that are captured will be documented and release outside of the Project Footprint boundary.

C. If a lactating female SJAS is captured (potentially January – May), one of two procedures below will be implemented:

    1. The female will be released immediately with follow-up trapping conducted within approximately 30 days (or less at the discretion of the Designated Biologist and depending on the condition of the female). The purpose of follow-up trapping will be to capture the female and any of her young that are venturing aboveground. If she still appears to lactating and young are not captured, it may be necessary to release her with additional follow-up trapping conducted.
    2. As an alternative, excavation of SJAS burrows within 100 feet of the capture location will be commenced immediately and trapping in that location will continue until completion of the fifth night session. If dependent young are encountered during burrow excavation, they will be placed with the female and held until the Designated Biologist determines that the young are capable of surviving either with or independent of the adult female.

D. Project minimization and avoidance measures will be implemented during all SJAS trapping and relocation/translocation activities.

E. Captured SJAS will be released into pre-identified release locations identified in Section I.H.3 above, following the procedures in Section IV, below. If new evidence of SJAS (individuals/burrows) is found in an active construction area, construction will be halted within a 50-foot avoidance area or greater if deemed necessary. Procedures A through D (above) will then be implemented.

III. Burrow excavation

Upon completion of five consecutive nights of live trapping, the following will be implemented:

A. Small mammal burrows suitable for SJAS that are present within the trapping grid will be excavated using hand tools if possible. If soil conditions or burrow depths make manual excavation impractical or unsafe, hand-held power tools may be used to assist in direct excavation of burrows. At no time will the hand-held power tool be used without a protective barrier (such as PVC tube, or similar) to prevent injury/mortality

to small mammals that may attempt to escape burrows during excavation procedures. With the Designated Biologist and/or Biological Monitor present, additional mechanized equipment (e.g., backhoe) may be used to expand, slope, and/or terrace excavations for safety; however, this type of equipment will not be used for direct burrow excavation.

B. If any SJAS are detected during burrow excavation, they will be captured (either through additional trapping or by hand) and release procedures (see below in Section IV) shall be followed; unless the individuals move into burrows that are greater than 50 feet from the construction boundary; or the SJAS will be allowed to escape to the adjacent natural habitat.

C. No SJAS burrow excavation will occur within any BNLL buffer avoidance area.

IV. SJAS Release

A. Subject to the direction of a Designated Biologist or Biological Monitor, captured SJAS will be released into the designated release location.

B. Relocation sites with both high quality habitat and the presence of shrubs, suitable topography or other cover in the vicinity will be given high priority.

C. The high quality habitat for the relocation sites will typically lack dense, non-native grass cover, or will be managed to reduce dense, non-native grass cover that occurs during years when herbaceous growth is high.

D. If necessary due to weather, time, or site preparation at release locations, captured SJAS will be held in captivity by a properly permitted small mammal trapping specialist. Captive SJAS would be subject to holding for no more than 30 days.

E. SJAS in captivity would be held in separate plastic, glass, or other rigid non-toxic container measuring at least five gallons in size in an onsite climate controlled room (between 60°F and 85°F). Individuals SJAS will be provided with non-tinted, unbleached paper towels and enough suitable substrate (soil, sand, or similar) to cover the bottom of the container. Each SJAS will be provided with approximately one cup of bird seed mix (e.g. mixture of approximately 75% proso white millet and 25% oats groats) initially that will be maintained until release.

F. Individuals will be released into existing suitable small mammal burrows or artificial burrows constructed within the designated release location based on relative location of individuals using the capture map of neighbors (Section II B).

G. If artificial burrows are created, no SJAS will be relocated within 50 feet of small mammal burrows that may be occupied by BNLL in BNLL buffer avoidance areas in the VFCL. Artificially created SJAS burrows in areas of the VRCL will be located at least 50 feet from small mammal burrows that may be occupied by BNLL unless protocol BNLL surveys have been conducted with no detections of BNLL.

H. Artificial burrows will be excavated with an approximately three-inch diameter soil auger. Regardless of method, a hole at least three feet in length extending at least two feet in depth shall be created.

I. Each artificial burrow relocation site in which a SJAS is released will be provisioned with four cups of seed (e.g. mixture of approximately 75% proso white millet and 25% oats groats) upon release. The area in the vicinity of each individual released will be provisioned with four cups of seed once per week continuing until green-up of vegetation or until provisioning is deemed to be unnecessary by the designated biologist.

V. Post-Release Monitoring

A. Released individuals will be temporarily marked using a permanent marker or other form (e.g. passive integrated transponder [PIT]) at the discretion of a Designated Biologist. A Designated Biologist or Biological Monitor will monitor release locations by conducting trapping between 60 and 90 days following release and after completion of all SJAS relocation for each construction phase (two phases anticipated).

B. Data to be collected on all SJAS recaptured will include: (1) the locations (Global Positioning System [GPS] coordinates and maps) and the time of capture and/or observation as well as release; (2) sex; (3) approximate age (adult/juvenile); (4) weight; (5) general condition and health, noting all visible conditions including gait and behavior, diarrhea, emaciation, salivation, hair loss, ectoparasites, and injuries; and (6) ambient temperature when handled and released.

C. The results of the trapping session will be included in the following year's CESA ITP annual report submitted to CDFW.

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U.S. Fish and Wildlife Service [USFWS]. 1998. Recovery Plan for Upland Species of the San Joaquin Valley, California. Region 1, Portland, Oregon. 319 pp.

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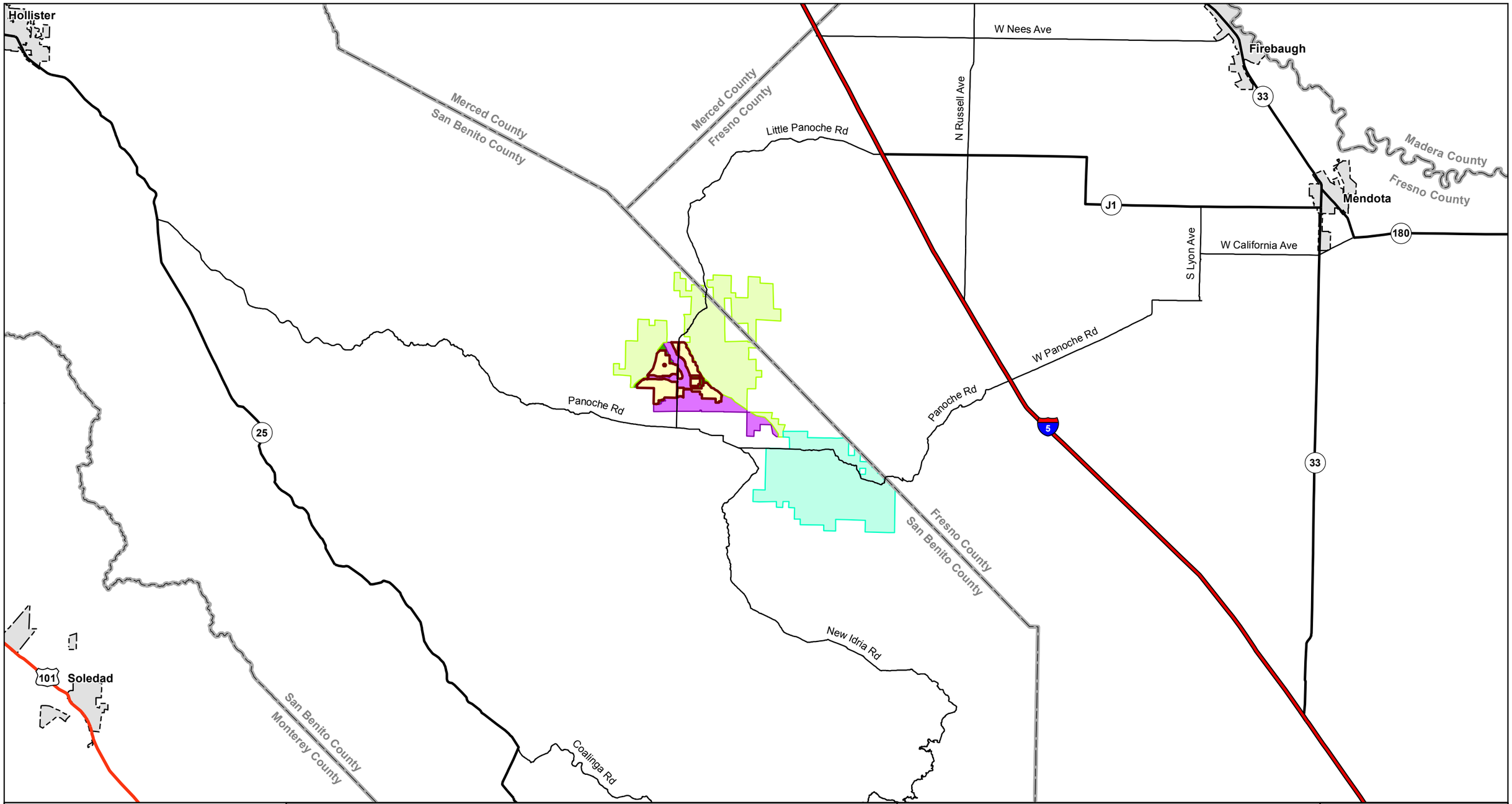
# FIGURES

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**Legend**

- Project Footprint
- On-site Conservation Lands
- Silver Creek Ranch Conservation Lands
- Valadeao Ranch Conservation Lands
- Valley Floor Conservation Lands
- City

# Panoche Valley Solar Project

## Project Location

Project Location: San Benito County, California

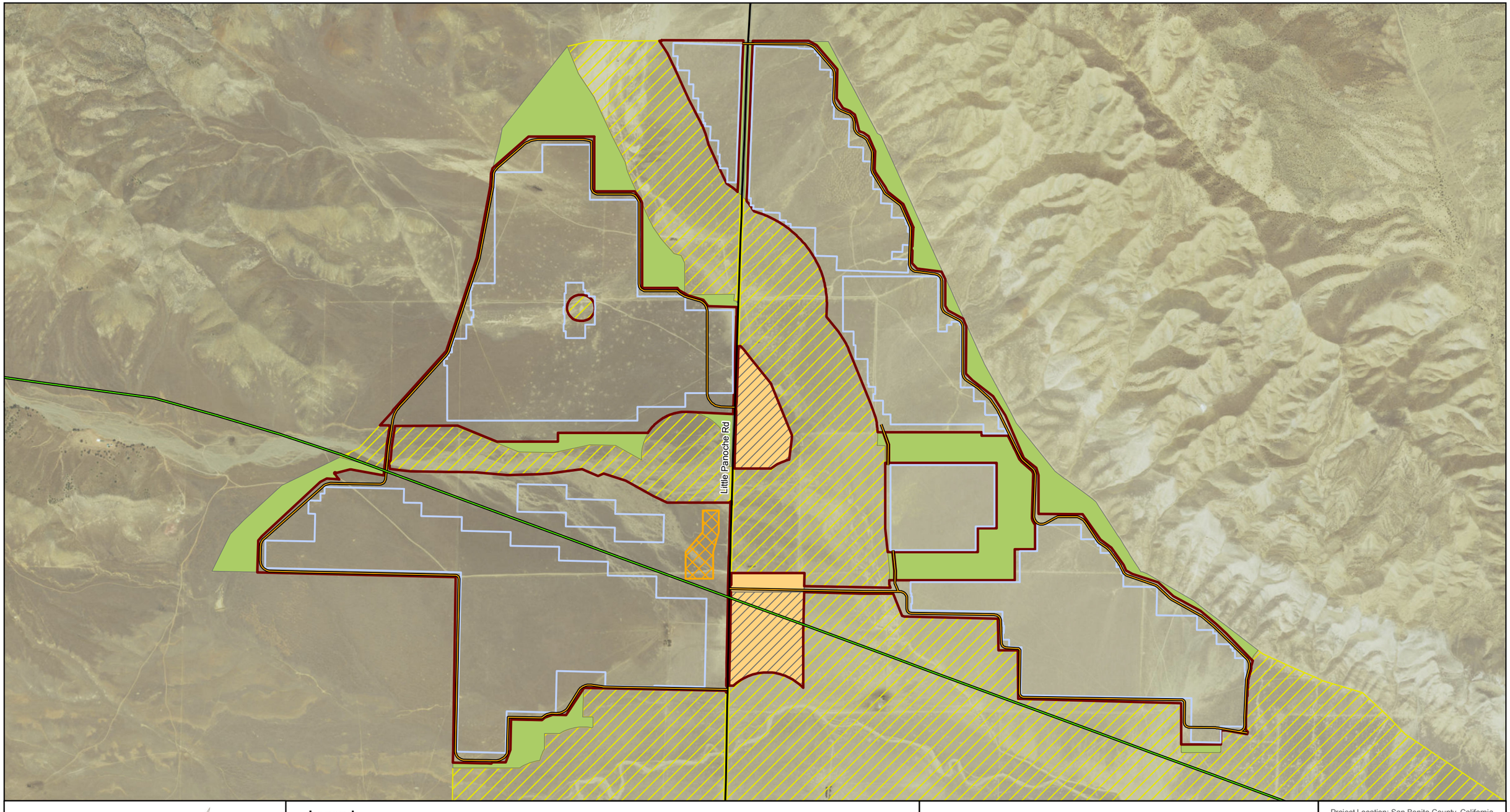
N

0 2 4 Miles

**FIGURE 1**

Prepared by: J. Hobbs

Date: 2015-12-01

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**Legend**

- Project Footprint
- On-site Conservation Lands
- Valley Floor Conservation Lands
- Proposed Panel Block
- Existing Transmission Line
- Perimeter Road
- Substation, Switchyard, O&M Building
- Temporary Laydown Yard
- Temporary Laydown Yard *(converted to on-site conservation land after construction)*

# Panoche Valley Solar Project

## Proposed Layout

Project Location: San Benito County, California

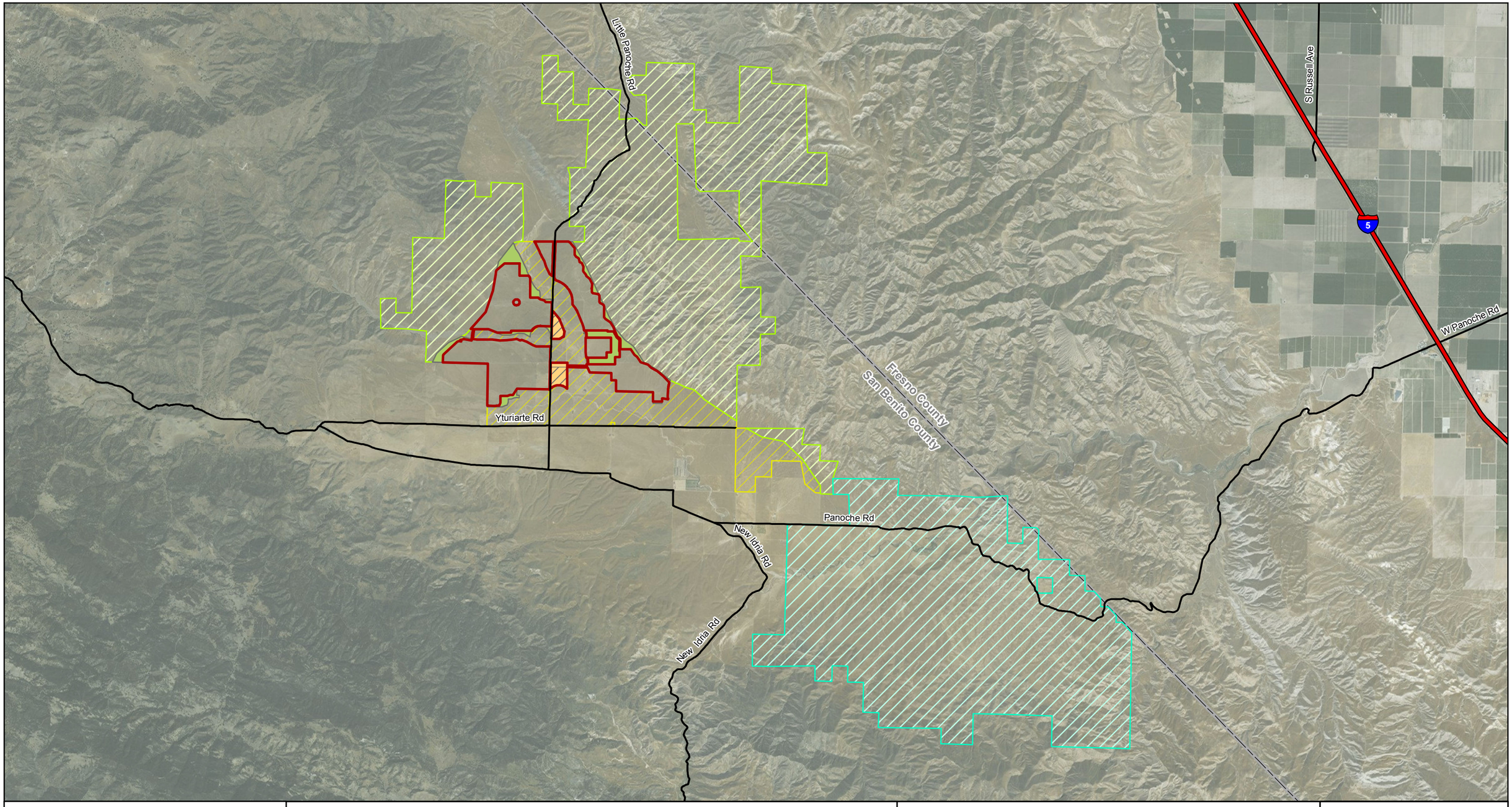
N

0 900 1,800 Feet

**FIGURE 2**

Prepared by: J. Hobbs

Date: 2015-12-01

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**Legend**

- Project Footprint
- On-site Conservation Lands
- Temporary Laydown Yard
- Temporary Laydown Yard *(To be converted to on-site conservation lands after construction)*
- Silver Creek Ranch Conservation Lands
- Valadeao Ranch Conservation Lands
- Valley Floor Conservation Lands

# Panoche Valley Solar Project

## Project Footprint and Conservation Lands

Project Location: San Benito County, California

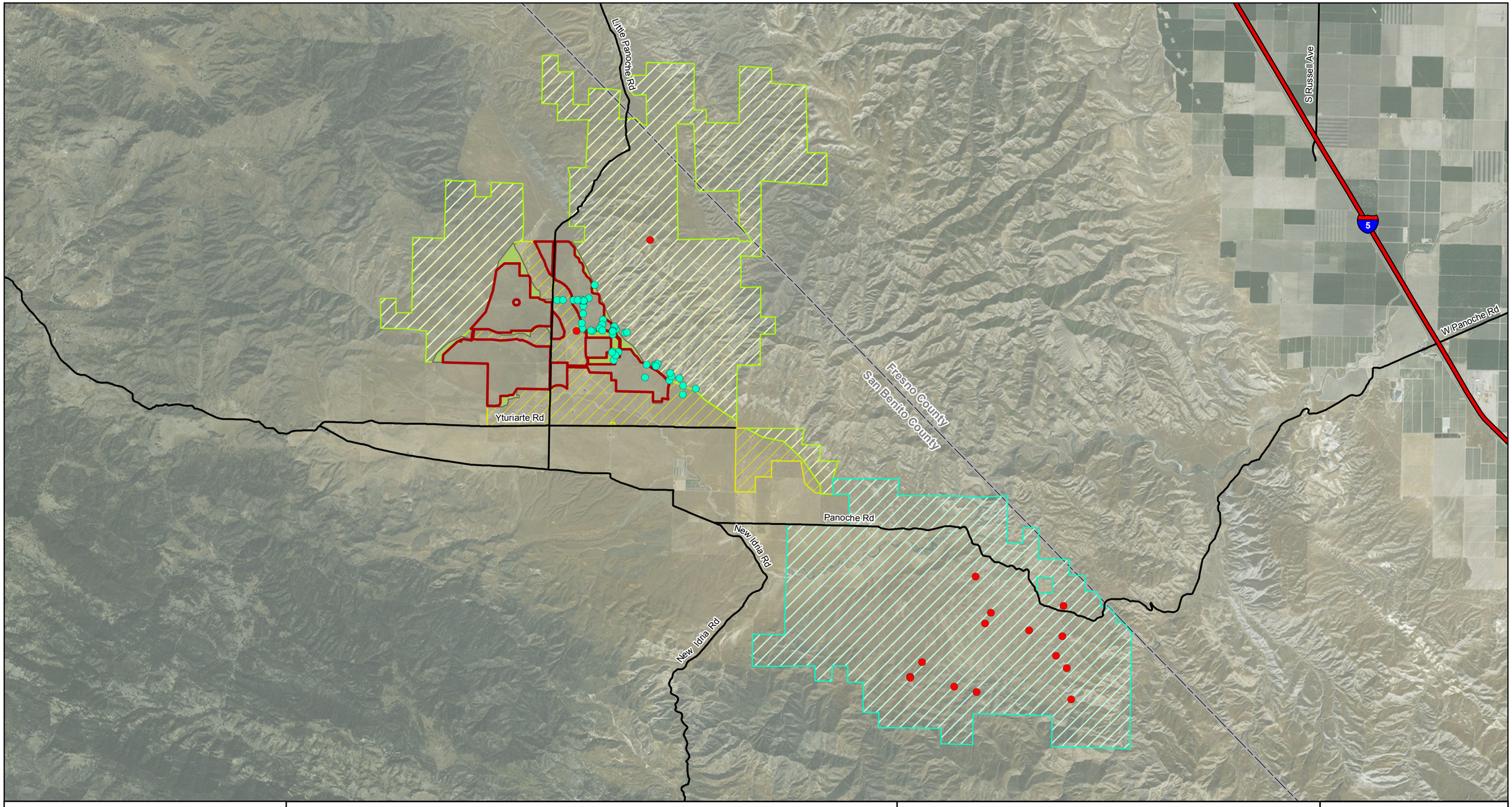
N

0 0.5 1 1.5 Miles

**FIGURE 3**

Prepared by: J. Hobbs

Date: 2015-12-01

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**Legend**

- Project Footprint
- On-site Conservation Lands
- Silver Creek Ranch Conservation Lands
- Valadeao Ranch Conservation Lands
- Valley Floor Conservation Lands
- Observation Location (Feb-Apr)
- Observation Location (Jun-Sep)

# Panoche Valley Solar Project

## 2013 San Joaquin Antelope Squirrel Observations

Project Location: San Benito County, California

N

0 0.5 1 1.5 Miles

**FIGURE 4**

Prepared by: J. Hobbs

Date: 2015-12-01

# Spill Prevention Plan

PANOCHE VALLEY
SOLAR PROJECT

**Panoche Valley Solar LLC**

**Panoche Valley Solar Facility**
**San Benito County**

**August 28, 2015**

# Spill Prevention Plan

**prepared for**

**Panoche Valley Solar LLC**
**Panoche Valley Solar Facility**
**San Benito, California**

**August 28, 2015**

**prepared by**

**AMEC Foster Wheeler PLC**

Document Number: R-PLN-000-004
Revision: 0 – Issued for Use

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**3.0 HAZARDOUS RELEASE RESPONSE ..... 4**

# 1.0 INTRODUCTION

The purpose of the Spill Prevention Control Plan is to identify preventive measures and minimize spills or accidental releases of hazardous materials, address proper handling of hazardous wastes that may be generated during construction, and review the appropriate response to emergency situations that may arise in association with hazardous materials. All hazardous materials spills will be cleaned up immediately, in accordance with this Plan.

# 2.0 HAZADOUS MATERIAL RELEASE PREVENTION

As provided by Section 25501(o) of the California HSC, hazardous materials include any material that poses a significant present or potential hazard to human health, safety, or the environment because of its quantity, concentration, or physical or chemical characteristics. Materials and waste may be considered hazardous if they exhibit hazardous characteristics (i.e., toxicity, ignitability, corrosivity, or reactivity), which may include petroleum products, lubricants, and extremely hazardous substances.

Hazardous Material Storage Areas (HMSAs) will be staged in a manner to prevent releases, explosions, or other chemical reactions. Designated HMSAs on the Project will be properly signed, secured, and will follow all storage restrictions, container management rules, and reporting as required by local, state, and federal requirements. Materials stored at or above the local, state, and or federal thresholds will be subject to a Hazardous Materials Business Plan (HMBP) and a Spill Prevention Control and Countermeasure (SPCC) Plan per 40 Code of Federal Regulations (CFR) 112; CCR Title 19, Sections 2620-2732, CCR Title 24, Part 9, Section 80.115; and California HSC, Division 20, Chapter 6.95.

During construction, hazardous materials will be used as common work practice. Typical materials used during construction include petroleum-based products, such as diesel, gasoline, lubricating oils, transformer oil, grease, and universal wastes. Accidental releases may occur as a result of mishandled materials, improper storage practices, leaking vehicles and equipment, or equipment failures. PVS and its contractors will implement the following measures to prevent and minimize release of hazardous materials:

- Storage, handling, and transportation of flammable and combustible liquids, including gasoline, diesel fuel, and gas cylinders will be performed in accordance with rules developed under state and federal regulations Title 8 CCR Section 1740 and 29 CFR 1910.106, respectively. These regulations include use of a licensed hazardous material transporter, fire protection requirements, storage quantity limitations, and spacing and location requirements.
- Containers of hazardous materials will remain closed unless adding or removing material.
- Hazardous materials will be stored in a secured location to prevent the risk of damage, vandalism, or theft. A secured location shall mean and area that is gated, locked, guarded or otherwise under the control of Project personnel.

- Incompatible materials will be stored in segregated areas. Materials that are incompatible will not be placed in the same container or in an unwashed container that previously held such material.
- Personnel responsible for managing hazardous materials will be trained in proper handling, storage, and transportation requirements, as well as appropriate emergency response procedures.
- Equipment containing petroleum or other hazardous substances will be inspected on a regular basis for leaks or signs of deterioration that could cause a leak or release.
- Hazardous materials will be stored in Department of Transportation (DOT)-approved containers or other compatible containers. When appropriate, hazardous materials will be stored in designated hazardous material storage areas and managed in accordance with this Plan.
- Storage locations of portable pumps, stationary equipment, and requirements for secondary containment will be coordinated on site with the Qualified Storm Water Practitioner (QSP) for the Project to protect water resources. Secondary containment will be used for storage tanks containing 55-gallons or more of oil.
- Only compatible containers designated for storing hazardous materials will be used. If a container is found to be damaged or leaking, the damaged container will be transferred to an overpack drum or the contents will be transferred to a container that is in good condition, and the damaged container will be disposed of properly. The overpack drum will also be clearly labeled with the type of material and hazard classification.
- Containers will be clearly labeled with the content and hazard classification.
- Containers will be maintained in good condition, with no leaks, ruptures, bulges, etc.
- Project personnel will adhere to manufacturer's recommendations on use, storage, and disposal of chemical products used during construction activities.
- Measures to prevent overfilling of fuel storage containers will be implemented. This may include use of a fuel gauge, fuel level alarms, or other devices as appropriate.
- Spill kits containing absorbent material and other spill response equipment sufficient to contain anticipated release scenarios will be clearly marked and readily accessible near designated hazardous material and waste storage areas, as well as jack-and-bore locations.
- Reasonable spill prevention measures, such as the use of spill-safe fuel cans and drip pans will be implemented, as appropriate, when transferring or using hazardous materials.
- All construction equipment and vehicles will be maintained in accordance with the manufacturer's recommendations to help prevent fluid leaks.
- Equipment repairs and refueling will be performed in a manner to prevent impact to waterbodies or groundwater (e.g., performing operations outside of resources when feasible, not leaving fueling activities unattended unless a pump shut-off valve is utilized, and utilizing drip pans).

In addition, the HMBP and SPCC Plans will be implemented during construction to address safe handling of hazardous materials.

## 3.0 HAZARDOUS RELEASE RESPONSE

Although all efforts will be taken to prevent an inadvertent release of hazardous materials during construction of the Project, if a release does occur, effective and prompt response will be implemented to help reduce the potential for exposure of hazardous materials to human health and the environment. In the event of a release or discovery of contaminated material, the following procedures will be implemented:

- Once discovery of a release has been made, the observer will contact the designated field representative and the site Site Safety Manager (SSM).
- The appropriate Project personnel, along with the field representative or SSM will work together to determine proper containment, cleanup, storage, and disposal of the release as described in the Containment and Cleanup Procedures of this Plan.
- The field representative or SSM will contact the Owner Environmental Compliance Lead as needed to notify them of the release.
- If a release is reportable, notification will be made to the County and other agencies as required by law, and described in the HMBP.

It is the responsibility of the Owner or Operator (i.e., PVS) to make agency notifications if a reportable release occurs.

**Containment and Cleanup Procedures**

Containment of a hazardous material release will be performed by authorized Project personnel trained in spill response procedures. Cleanup personnel must wear the appropriate personal protective equipment (PPE) and be familiar with the waste storage procedures. Containment procedures that may be implemented during construction include, but are not limited to, the following:

- If the release is relatively small, absorbent pads and material will be applied to the surface of the release to absorb all of the liquid.
- Incidental releases of hazardous materials that can be absorbed, neutralized, or otherwise controlled safely at the time of release by employees in the immediate release area, will be immediately cleaned.
- Discharge into storm drains or other storm water conveyance systems will be prevented by obstructing those features that are located in the area of the release with plastic, booms, and/or earthen dikes.
- Releases will be secured and covered with plastic sheeting to protect the contamination from spreading during rainfall.
- The risk of a large release could occur during transformer filling and fueling operations. Fuel trucks containing transmission oil or diesel fuel typically contain a volume of approximately 10,000 gallons. If a large release of a

petroleum-based product occurs, earthen ditches or dikes will be constructed around the release site to prevent the discharge from flowing off site or into waterways, and Project personnel will determine if a licensed emergency spill response contractor should be utilized. The licensed emergency spill response contractor that will be utilized in the event of a large release will be identified before to the start of construction.

- If it is determined that the release cannot be safely contained by Project personnel, the field representative, or SSM will determine if work should cease in the area, if emergency assistance is necessary, and if containment procedures can be implemented safely. If it is decided that emergency assistance is necessary, the field representative or SSM will contact 911.
- Appropriate signage will be placed around spill to prevent individuals and vehicles from entering larger release areas until the field representative or SSM is able to assess the situation for safety.

Once the release of hazardous material has been contained, cleanup personnel will clean the contaminated area by implementing the following measures:

- Appropriate absorbent materials will be used to thoroughly clean the spill area to the extent possible.
- Spills will not be diluted with water or other liquids for purposes of mitigating the spill. If the use of water or other liquids is necessary for final cleaning or dust control, the water or other liquids will be collected and disposed of in accordance with all local, state, and federal regulations.
- All contaminated material, including rocks, mulch, soil, and cleanup material, will be removed, stored, and disposed of as a hazardous waste in accordance with all local, state, and federal regulations.